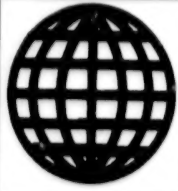


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16 MARCH 1990



**FOREIGN
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JPRS Report

Nuclear Developments

Nuclear Developments

JPRS-TND-90-006

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Nuclear Industry Firm Expands Internationally

*OW0703084790 Beijing XINHUA in English
0713 GMT 7 Mar 90*

[Text] Beijing, March 7 (XINHUA)—The China Nuclear Industry Corporation (CNIC) achieved a foreign trade volume of 60 million U.S. dollars last year with exports outstripping imports.

The corporation's rate of fulfillment of contracts is 98 percent and the customers are satisfied with the quality of its products.

The CNIC has established trade co-operation ties with more than 100 firms in over 40 countries and regions, according to today's overseas edition of the PEOPLE'S DAILY.

CNIC's general manager, Zhang Xinduan said the corporation exports nuclear fuel to nuclear power companies in Federal Germany, France, Belgium, Finland and the United States.

Also, China is one of the countries which provides uranium for scientific research in Japan and Chile.

China Attends Asian Nuclear Conference

*OW1203211490 Beijing XINHUA in English
1539 GMT 12 Mar 90*

[Text] Tokyo, March 12 (XINHUA)—Japan is willing to take initiative in promoting nuclear power cooperation within Asia, the director general of the Japanese Science and Technology Agency, Tomoji Oshima, said here today.

He was speaking at the opening of the first international conference on nuclear cooperation in Asia, attended by delegates from China, Indonesia, Malaysia, the Philippines, South Korea and Thailand as well as Japan.

Oshima said Japan, which has so far conducted nuclear power cooperation mainly through exchanges of experts, intends to boost this further to ensure effective use of the region's limited resources.

Chen Zhaobo, vice president of the China National Nuclear Industry Corporation, said that China was steadily building nuclear power plants through its own efforts and actively applying radioisotope and radiation technology in the industrial, agricultural and medical fields.

Report Profiles Nuclear Materials Base

*HK0103074790 Hong Kong ZHONGGUO TONGXUN
SHE in Chinese 0830 GMT 22 Feb 90*

[Text] Beijing, 22 Feb (ZHONGGUO TONGXUN SHE)—According to information provided by the China National Nuclear Industry Corporation, a Volcano cliff on the mainland from Jiangxi to Hangzhou has become the most important nuclear materials base in China.

China began to explore and tap uranium resources in this area in the 1950's. Through the explorations over the past years, the uranium deposits in this area have been initially verified and the area has been proved to be a large scale mineralized belt in the world for tapping volcano uranium resources.

After an on-the-spot observation in that area, the experts from more than 10 countries, including France, the United States, Japan, and Australia, also admitted that the achievements China has made in this field have reached the advanced level of the world on the theory of the same type of uranium mineralization. China has achieved remarkable successes in the research and exploration of the volcano uranium resources and is among the world's most advanced countries in this respect.

Achievements of Nuclear Industry Cited

*OW0703143690 Beijing Television Service
in Mandarin 1100 GMT 28 Feb 90*

[From "National News Hookup" Program]

[Text] It was learned from the China National Nuclear Industry Corporation that the development and foreign trade of civilian-used articles of China's nuclear industry have grown rapidly.

Nuclear fuels have been exported to the Federal Republic of Germany, Finland, the U.S., and other countries. The fuels used by the Sino-foreign run Dayawan Nuclear Power Station in Guangdong are also provided by the China National Nuclear Industry Corporation. These fuels are used under the supervision of the International Atomic Energy Agency.

Entering into the international market by China's excellent-quality nuclear fuels has reflected China's nuclear resources and technical ability. Currently, the China National Nuclear Industry Corporation has established trade relations with more than 100 companies and trading agencies in more than 40 countries and areas.

Purchase of Soviet Nuclear Power Plant Planned

*HK1403093490 Hong Kong AFP in English
0913 GMT 14 Mar 90*

[Excerpt] Beijing, March 14 (AFP)—China is negotiating the purchase of a 2,000 megawatt nuclear power plant from the Soviet Union to be installed in the northeastern province of Liaoning. Energy Minister Huang Yicheng said Wednesday.

"We have begun negotiations, established numerous technical contacts but the final decision rests with the state council (the government)," Mr. Huang told a press conference.

Informed sources, however, said that the contract was to be signed soon and the purchase would be partly done through barter.

The two phases of the plant will be built on the coast near Jinzhou, said the minister, who added that the plant's reactor would be "radically different" from that used by the Soviet nuclear plant of Chernobyl which blew up in 1986.

The negotiations confirmed that the Soviet Union, which has sold several nuclear power plant to Eastern Europe, has become a serious competitor to Western companies in China where a vigorous nuclear programme and vast energy needs offer attractive prospects.

The power plant project also reflected progress in Sino-Soviet trade relations in the wake of the reconciliation between the two countries some 10 months ago following a 30-year rift, observers said.

Mr. Huang confirmed that the operation of the country's first nuclear power plant in Qinshan, in the

southeastern province of Zhejiang, will become effective by the end of this year.

He also said that work was proceeding smoothly at the nuclear power plant project in Daya Bay, near Hong Kong, and the two phases of 900 megawatts each will start operation in 1992 and 1993 respectively.

The 3.5 billion dollar Daya Bay plant is China's largest foreign joint venture. Electricite de France and Framatome, both French companies, are responsible for 70 per cent of construction work on the nuclear plant with Britain's General Electric carrying out other work on the site.

China last year announced plans to build two more nuclear power plants in the southern province of Guangdong. [passage omitted]

INDONESIA

Minister on Need To Build Nuclear Plants Quickly

*BK2802094190 Jakarta Domestic Service in Indonesian
0500 GMT 28 Feb 90*

[Text] Indonesia cannot further delay the construction of its nuclear power plant. It should be completed by the year 2005 so as to meet its energy demands. Speaking in Jakarta yesterday, Mining and Energy Minister Ginanjar Kartasasmita said it takes about 10 to 15 years to build a nuclear power plant. Therefore, Indonesia must now be ready to start constructing the plant.

He noted that by the year 2010 there should be two nuclear plants in Indonesia, each with the capacity of 650 megawatts.

JAPAN

Concern Over French Nuclear Deal With Pakistan

*OW0803153290 Tokyo KYODO in English 1256 GMT
8 Mar 90*

[Text] Tokyo, March 8 (KYODO)—The Japanese Foreign Ministry on Thursday conveyed its concern to France over its sale of a nuclear power plant to Pakistan without Pakistan's agreement to open all its nuclear facilities for international inspection, officials said. Hiroshi Ota, director general for science and technology affairs, summoned to the ministry French Minister Jean-Jacques Subrenat to file Japan's concern.

Ota noted that the French nuclear sale to Pakistan, which is not a member of the Nuclear Nonproliferation Treaty, did not ensure a full-scope safeguard inspection of the facility and expressed concern over the lack of such safeguards, the officials said.

Japan withholds nuclear cooperation to nonmembers of the nonproliferation treaty, which obliges signatories to conclude a separate safeguard agreement with the International Atomic Energy Agency (IAEA) within 18 months.

Japan is also worried because it is difficult to monitor the management of used nuclear fuels in nations which are not members of the treaty and are not legally bound by the full-scope safeguard inspections, ministry sources said. Japan cannot remain indifferent to these situations, the sources said, referring also to the ministry's recent call to North Korea to allow outside inspection of its nuclear facilities.

The treaty signatories, which have emphasized nuclear arms reduction until now, will likely shift their attention to the issue of peaceful usage of nuclear power when they meet in August in Geneva, the sources said. The member nations gather once in five years to study implementation of the treaty.

French President Francois Mitterrand said in Pakistan last month that his Government has authorized French industrial firms to make technical and commercial offers to sell a 900 megawatt reactor.

Pakistan has tried to set up a nuclear power plant since 1982, but none of the leading suppliers of nuclear technology have submitted bids due to American pressure for Pakistan to sign the nonproliferation treaty. France, one of the five advanced nuclear nations, is not a member of the treaty.

Conference on Room Temperature Fusion Opens

*OW2702090890 Tokyo KYODO in English
0550 GMT 27 Feb 90*

[Text] Osaka, Feb. 27 (KYODO)—Japanese scientists began a two-day conference on Tuesday to discuss methods for creating room temperature nuclear fusion, researchers financially backed by the Ministry of Education said. The participants will hold talks on ways to devise simple methods to measure the as yet nonexistent phenomenon of room temperature nuclear fusion, the researchers said.

The conference will discuss academic papers and experimental research on room temperature nuclear fusion work being carried out at laboratories for the past one year, forum officials said. The academic meeting, sponsored by a group of researchers supported by the ministry, includes experts from universities and national research institutes throughout Japan.

A breakthrough discovery in room temperature nuclear fusion could end reliance on fossil fuels and supply continuous energy for all the world's needs, scientists believe.

Last autumn, groups in Britain and the United States announced one after the other that researchers are continuing to conduct experiments and develop theories toward room temperature nuclear fusion, the officials said.

In Japan, the Ministry of Education has funded universities and research institutes with about 50 million yen to pursue room temperature fusion, research which has not brought any rewarding results as of yet, the officials said. Thirty-two Japanese scientists will report results of their work including that on the electrolytic analysis of heavy hydrogen absorbed by palladium and titanium electrodes during the theoretical room temperature nuclear fusion process.

They will also report on methods to measure energy discharge as the palladium absorbs heavy hydrogen gases, and on the detection of neutrons, or energy as means to prove nuclear fusion.

While scientists worldwide have yet to achieve room temperature nuclear fusion, many have hopes of a breakthrough in the near future, experts say.

NORTH KOREA

USSR Assesses North Korean Readiness To Sign IAEA Agreement

90WP0051A Moscow *RABOCHAYA TRIBUNA*
in Russian 4 Mar 90 p 3

[Article by G. Petrov, TASS analyst for *RABOCHAYA TRIBUNA*: "Work Is Being Completed on an Agreement With the IAEA To Rid the Korean Peninsula of Nuclear Weapons"]

[Text] The "creeping" of nuclear weapons is one of the problems that increasingly concerns the public both in the East and in the West. While the USSR and the United States are advancing step by step along the path of reducing their nuclear arsenals, some countries, above all Israel, the South African Republic, and Pakistan, are very close to creating their own nuclear potential.

Recently there has been concern expressed in the United States, South Korea, Japan, and Australia that the Democratic People's Republic of Korea, too, is allegedly capable of creating its own nuclear weapons, possessing a small atomic reactor supplied by the Soviet Union for scientific research work back in the 1950s. They remind us that Pyongyang, unlike Seoul, up to now has not concluded an agreement with the IAEA with respect to verification, although it is a party to the Treaty on the Non-Proliferation of Nuclear Weapons.

The North Korean side admits that resolving the issue of concluding an agreement with the IAEA on safeguards has been drawn out, inasmuch as it promised to sign it within 18 months back in 1985. It explains this by the fact that its experts do not yet understand the complex organizational and technical problems associated with signing the document. At the same time, the DPRK rejects urging on by the IAEA secretariat, considering it insulting for a sovereign nation. In addition, Pyongyang insists that Washington pledge not to use against the DPRK American nuclear weapons located on the Korean Peninsula. The Americans do not recognize a direct link between the presence of its weapons in this region and the DPRK's conclusion of an agreement with the IAEA.

In June 1986, the DPRK government confirmed its pledge not to test, produce, introduce, or station nuclear weapons on the territory of the DPRK. And last November, the DPRK Ministry of Foreign Affairs proposed holding trilateral talks involving the United States and South Korea on the withdrawal of American nuclear weapons from the south of the Korean Peninsula and also talks between North and South Korea to adopt a declaration on turning the peninsula into a nuclear-free zone. This initiative was welcomed in many countries and supported by the Soviet Union. However, Washington and Seoul responded negatively to the DPRK's proposal.

The question of the DPRK's agreement with the IAEA was raised at a press conference by USSR Minister of Foreign Affairs E.A. Shevardnadze on 10 February devoted to the results of U.S. Secretary of State J. Baker's visit to Moscow. The Soviet minister stated at that time that the "Korean leaders are very close to completing work on an agreement with the IAEA with respect to verification and to placing their reactor under control of the IAEA. I think this is a very important circumstance," he noted.

But the other side, too, must contribute to turning the Korean Peninsula into a nuclear-free zone.

SOUTH KOREA

Uranium Import Deal Struck With Soviet Union

Ministry Issues Announcement

SK0503125990 Seoul *YONHAP* in English 1247 GMT
5 Mar 90

[Text] Seoul, March 5 (*YONHAP*)—South Korea will import enriched uranium, fuel for nuclear power plants, from the Soviet Union for 10 years until 1999, according to the Energy and Resources Ministry Monday.

A government panel Monday resolved to import the Soviet-produced nuclear fuel on a long-term basis in order to secure a stable supply of the nuclear fuel on better price conditions, ministry officials said. The enriched uranium is a finished product which contains 3.5 percent of uranium 235.

The Soviet Union has offered to the Korean government to sell its enriched uranium since the end of 1988, ministry officials said. According to conditions offered by the Soviet Union, Korea will buy enriched uranium on a long-term basis from 1990-1999 and the prices will be much lower than those Korea paid under long-term contracts with other countries last year. In addition, 30 percent of the payment will be made in Korean electronics products, according to the officials.

It is the first time for Korea to import finished nuclear fuel. So far, Korea has imported uranium ore from Australia, France and Canada and enriched it in the United States and France. It cost Korea 1,060 U.S. dollars per one kilogram of enriched uranium last year. The price of Soviet enriched uranium would be around 700 dollars—halfway between the 1,060 dollars Korea paid last year and the average price of 530 dollars in the international spot market last year, they said.

The amount of enriched uranium import from the Soviet Union will not exceed 40 tons annually considering the fact that Korea maintains import contracts with the United States until 2015 and with France until 1996. The officials said there will be no safety problems in importing the Soviet uranium.

The Korea Electric Power Corp., which will consume the nuclear fuel, will begin negotiations with a Soviet agency in charge of nuclear power export for formal contract next month. In connection with the uranium export, the Soviet Union is expected to buy electronics goods worth 6 million dollars a year from Korea.

Uranium Agreement Analyzed

SK0603062890 Seoul YONHAP in English 0502 GMT
6 Mar 90

[Text] Seoul, March 6 (YONHAP)—South Korea will buy enriched uranium, a top strategic material for nuclear reactors and warheads, from the Soviet Union under a 10-year contract that takes effect this year. Korea will import 40 tons of the enriched uranium a year, paying 30 percent of the cost with merchandise, according to the Energy and Resources Ministry.

Both countries have agreed to the safeguard assurance on the transportation of nuclear materials imposed by both the Non-Nuclear Proliferation Treaty and the International Atomic Energy Agency and there is no problem in terms of security, a ministry spokesman said.

This is a very different item for the two nations to trade. It is classified as a top strategic material because it can be processed for weapons use. International exchanges of nuclear fuel rely on mutual credibility and the agreement between Seoul and Moscow implies the thaw in their relations is accelerating.

The Soviet Union has been a patron for North Korean leader Kim Il-song since North Korea was given birth in the mid-1940s and was regarded as South Korea's No. 2 enemy after North Korea only a few years ago.

This agreement to trade the militarily sensitive material signals that the growing bilateral relationship, basically founded on the communist superpower's economic needs, is moving to a political level. The two nations have limited consular relations, using consular departments in their trade offices in Moscow and Seoul.

Economically, the Soviet uranium will help South Korea correct unequal contracts with its current monopolistic suppliers. All Korea's uranium concentrate comes from Australia, Canada and France. The enriched uranium, amounting to about 130 tons a year, arrives in Korea after being processed in the United States and France.

Korea was compelled to put up with unfavorable terms, such as volume and conditions for contract cancellation, because there were no alternative suppliers. The price of enriched uranium last year was 1,060 U.S. dollars per kilogram, double the price on the spot market, according to industry estimates.

The Soviet price was not disclosed, but a ministry official said it was "much lower" than the current price and the countervailing trade terms are favorable to Seoul.

The Korean Government was worried about how the U.S. Government would react since Washington has demanded a new contract for additional nuclear plant fuel. Korea's utility service contracts with America and France expire in 2015 and 1996, respectively.

The ministry said some of the Soviet uranium will be stockpiled and the rest used to meet new demand that will be created after 1995, adding that the existing uranium suppliers will not be affected by the deal. The ministry also said the agreement was the result of an oft repeated Soviet proposal.

Despite government concern over the U.S. reaction, businessmen hailed the agreement as highlighting the unfair trade practices that Seoul hopes to correct. In addition to the deal's political and economic advantages, a ministry official said bilateral cooperation in nuclear technology will be enhanced. Under the countervailing agreement, the Soviets are expected to buy 6 million dollars' worth of merchandise from Korean electronic goods makers a year, according to the ministry.

'Hasty Conclusion' on Ties

SK0703014290 Seoul THE KOREA HERALD
in English 7 Mar 90 p 6

[News analysis by staff reporter Choe Song-chin: "Soviet Uranium Deal Draws Interest"]

[Text] Monday's announcement on the planned purchase of Soviet enriched uranium is drawing keen interest for its potential economic, political and diplomatic effects. As is widely known, trade in uranium concentrate as a nuclear fuel, although an international practice itself, is subject to strict government surveillance as a strategic material.

The government's decision to expand the budding bilateral economic cooperation with the Soviets to the internationally delicate items has forced many local analysts to jump to the hasty conclusion that the two countries may soon establish full diplomatic relations. The economic and political watchers based their judgment on the fact that the deal was made in time for the scheduled Moscow visit of Kim Yong-sam, a co-leader of the ruling Democratic Liberal Party, March 19 and a bilateral business leaders' meeting March 23. The move symbolizes Seoul's desire to advance the consular-level relationship with Moscow, while urging the latter to show corresponding efforts, they said.

The international enriched uranium market is facing a glut now as shown by the fact that spot market prices are only half of the long-term contract prices.

While Korea plans to buy a Soviet item that can be supplied by someone else, Moscow will import much needed consumer products, including home electronics, in limited barter trade.

Now is the time for the Soviet Union to come up with concrete steps to further the existing economic and

political ties, the observers said. So far, Korea has maintained that the country's cooperation will be helpful for successful implementation of Gorbachev's perestroika policy, while the Soviet Union demanded more advances by Korean businesses before upgrading ties.

Against this backdrop, there have recently been number of moves in this direction. The opening of direct flight routes, exchange of consular services, the Korean government's permission for investment in large projects in the East bloc country, exports of cold rolled sheets made by Pohang Iron and Steel Co., signing of a double taxation avoidance pact, and mutual investment guarantee agreements.

The government's dilemma of not angering such existing suppliers as the United States and France is seen in the rather limited intake volume of 40 tons per year, or one-fourth of the total demand to fuel nine nuclear power stations. Although there is no problem concerning direct uranium imports from the Soviet Union, response from the United States, which has exerted dominant influence over Korea's nuclear industry, is worth nothing. Hidden behind the political-diplomatic anticipation is the pure economic impact of the deal, other analysts said.

Korea now has unequal contracts with the United States, under which Seoul is supposed to buy 70 percent of its total nuclear fuel demand from the U.S. Department of Energy. First signed in 1973, the 30-year contract, despite three revisions in 1978, 1983, 1989 and obligates Korea to notify the seller of any intent of cancellation 10 years in advance and pay heavy penalties for doing so.

Korea Electric Power Corp. [KEPCO], the state-run utility, has also made many blunders in securing nuclear fuel in the past. KEPCO spent 170 billion won on nuclear fuel last year, about 80 percent of which, or 136 billion won, went for the purchase of refined ore and reconversion and enrichment fees.

The Soviet uranium, in finished form, will also cut the delivery period from an average 15 months to less than six months, they said. The new contract in this regard will help KEPCO improve the present unfavorable terms and conditions, they said.

Soviet Uranium To Be Imported

SK0703021090 Seoul THE KOREA HERALD
in English 7 Mar 90 p 4

[Editorial: "Imported Soviet Uranium"]

[Text] The expected importation of enriched uranium from the Soviet Union this year will mark another turning point in the increasing economic and trade links with the leading Communist nation and most members of the East bloc.

According to the Ministry of Energy and Resources, Korea will purchase up to 40 tons of uranium concentrate with a U235 content ratio of 3.5 percent annually during the contract period of 1990-1999 to fuel local nuclear power plants.

The advantages of bringing in the finished uranium product are more than the economic reasons cited by the government. The Soviet imports will be less expensive than the current ore purchases from Western countries including Canada and France. Moreover, buying from the USSR will avoid the cumbersome and time-consuming process of processing and refining in the United States and France, from where the semi-finished products are reimported for final fabrication here. However, some caution is needed to minimize a possibly adverse effect of the import from the Soviet Union upon Korea's old Western partners.

An arrangement to pay part of the cost in Korean products will clear the way for further barter trade between Seoul and Moscow. Already, a local food company has started exporting noodles to the Soviet Union in exchange for timber. For the present, the formula of barter trade is quite practical for the two new trading partners.

One of the top captains of Korean industry is now visiting the Soviet Union to explore the possibility of participating in the development of Siberia. Regular air and shipping services are likely to begin in the near future. All these developments are positive in light of the Soviets' efforts for economic reform and liberalization. The growing economic exchanges might well prod Moscow to change its political stance toward Seoul.

North Asked To Use Nuclear Energy Peacefully

SK1003090290 Seoul SEOUL SINMUN in Korean
7 Mar 90 p 2

[Editorial: "North Korea's Nuclear Development Is Dangerous"]

[Text] The eyes of the world have been focused on North Korea because of its nuclear development capability. We too, cannot help but be anxious about and be worried over the North's nuclear capability. Because of the belief that North Korea may be manufacturing nuclear bombs by using nuclear fuel left over at nuclear power plants, a meeting of the Board of Governors of the International Atomic Energy Agency (IAEA), which was held in Vienna last month, advised North Korea that it should "sign the Full-Scale Safety Measure Agreement by June." This means that it was confirmed internationally that North Korea has a nuclear development capability.

It was confirmed long ago that North Korea had this capability. In his testimony to Congress, U.S. Secretary of Defense Cheney warned that North Korea's plan for nuclear development threatens security in East Asia. Also, Soviet Minister of Foreign Affairs Shevardnadze said last February that North Korea, which has pursued

nuclear development, would be able to manufacture nuclear weapons sometime in the future. The International Affairs Institute, a prestigious French institute, and JANE'S WEEKLY, a British military affairs magazine, stated that North Korea has, no doubt, pursued nuclear development for military purposes. This means that North Korea may attack South Korea using nuclear or gas weapons.

However, North Korea has denied its development of nuclear weapons, and has refused the IAEA's inspection of its nuclear facilities. North Korea signed the Treaty on the Non-Proliferation of Nuclear Weapons in December 1985. Nevertheless, it has refused to sign the Safety Measure Agreement, which is necessary for an on-the-spot inspection. This refusal has come even though the treaty stipulates that the agreement must be signed. In turn, North Korea has been criticized internationally.

If it has nothing to be afraid of as far as the nuclear issue is concerned, instead of turning a deaf ear to international warnings and denunciation, North Korea must make public its facilities—facilities which have put the countries concerned on their guard and have worried them—and must fulfill its duty for peace by accepting an international inspection.

North Korea fixed a national division by provoking a war between fellow countrymen 40 years ago. Even today, while adhering to the outdated theory of carrying out an armed communist revolution, North Korea is plotting to provoke another war. This has been proven by the presence of a fourth underground tunnel, which was discovered inside the truce line a few days ago.

It is truly horrible that North Korea, which has kept itself secluded and enclosed, may possess nuclear weapons. This may plunge the Korean peninsula, Northeast Asia, Asia, the Pacific, and the world in general into the horror of a nuclear war. If made ill use of—for destructive purposes in war—nuclear energy will annihilate all of mankind because of its formidable power. Nuclear energy is not like powder for a toy gun, but the greatest horror in the history of mankind. It is intolerable for a group that is digging underground tunnels or kicking up other war maneuvers, to possess weapons manufactured using this formidable nuclear power. Because of this horrific power, countries of the world have kept watch on even each other or held each other in check even when they use nuclear energy peacefully.

As part of our effort to carry out a northern diplomacy, our government decided to import enriched uranium—fuel for nuclear power plants—from the Soviet Union this year. This was possible because our determination to peacefully use nuclear energy and our perfect safety measures are internationally recognized. Because it was confirmed that North Korea has pursued nuclear development, we hope it would not use nuclear energy in war, but only for peaceful purposes. North Korea must sign the safety agreement with the IAEA before demanding that the Korean peninsula become nuclear-free.

South Proposes 'Nuclear Hotline' to North

*SK1203140090 Seoul Television Service in Korean
1200 GMT 12 Mar 90*

[Text] [Anchorman Pak Song-pom] The government today proposed to the North side that the North and South establish a hotline to help each other in preventing a nuclear reactor accident. The proposal was made public at the International Conference for Nuclear Cooperation in Asia.

At the First International Conference for Nuclear Cooperation in Asia held today in Tokyo, Yi Sang-hui, minister of science and technology, called on North Korea to sign an agreement on the nuclear safeguards system.

Correspondent Yi Chun-pal in Tokyo has a report:

[Begin Correspondent Yi Chun-pal recording] In his keynote speech at today's conference, Minister of Science and Technology Yi Sang-hui, calling on North Korea to sign the Nuclear Safeguards Agreement, said that South Korea, in order to play a major role since it was ranked 10th among those having nuclear power generators, was proposing the establishment of a standing community for nuclear cooperation among the nations of Asia.

Minister Yi particularly stressed the fact that the basis of our country's nuclear policy is to ensure safety domestically and the peaceful use of nuclear energy externally. He then emphasized the importance of unity between Korea and Japan in organizing a nuclear techno-belt in the Northeast Asian region. Minister Yi also proposed that, toward this end, Korea and Japan establish a nuclear hotline to prepare for various kinds of nuclear accidents.

The proposal for establishing a consultative body for nuclear cooperation put forward by Minister Yi at today's conference means that our country has transformed itself into a country that helps other Asian countries with nuclear technology, this from a state that has received nuclear technology over the past 30 years. About 300 officials in charge of nuclear affairs and scholars from eight Asian countries, including our country and Japan, attended today's conference. [end recording]

Completion of Nuclear Power Plants Reported

*SK2702083890 Seoul YONHAP in English 0620 GMT
27 Feb 90*

[Text] Ulchin, South Korea, Feb. 27 (OANA-YONHAP)—Energy and Resources Minister Yi Pong-su, in a ceremony attended by celebrities and villagers, declared the completion of two nuclear power plants near the seaside city of Ulchin in North Kyongsang Province on South Korea's east coast on Tuesday [27 February].

It took 2.119 trillion won (about 3.1 billion U.S. dollars) and 9.9 million man-days to complete the pressurized water reactors (PWR), Ulchin unit one and Ulchin unit two. Ground was broken in January 1981. Each of the reactors can produce up to 950,000 kilowatts of electricity, giving Korea a nuclear power generation capacity of some 7.62 million kilowatts, or 36.3 percent of its total capacity of 21 million kilowatts. Ulchin One went into commercial operation in September 1988, and Ulchin Two a year later, raising the nation's nuclear power dependency rate for its nine reactors to 50 percent from 47 percent at the end of 1988.

The prime contractor was the state-run Korea Electric Power Corp. (KEPCO). Localization in the equipment supply sector was 40 percent, and in the overall plant engineering sector it was 46 percent. The nuclear steam supply system and the turbine and generator were supplied by the French firms Framatome and Alsthom, respectively, while secondary equipment was self-developed. Local contractors were Korea Power Engineering Co. (KOPEC) and Korea Heavy Industries and Construction Co. (KHIC) in design and Tong-a Construction Co. and KHIC in construction.

Since the plants were constructed amid mounting global interest in the safety of nuclear power stations, KEPCO set up a five-step safety system that employs the latest safety equipment and regulations of France and the United States, a KEPCO official said.

Completion of Iranian Power Plant Considered

SK0203014090 Seoul THE KOREA TIMES in English
2 Mar 90 p 8

[Text] Korea is cautiously looking at the possibility of participating in a reconstruction project of an atomic power plant in Iran, abandoned by a West German company due to the Iran-Iraq War. Tehran asked Korea to complete the construction of the abandoned Bushehr nuclear power plant in late January, when a high ranking official from the Atomic Energy Organization of Iran visited Seoul, the Korea Power Engineering Co. (KOPEC) said yesterday.

KOPEC, a subsidiary of the Korea Electric Power Corp., said a survey team of nuclear technicians was sent to Iran

last week to make a feasibility study. KOPEC is learned to be taking a positive view of participation in the reconstruction project on the ground that its nuclear technology, accumulated since Korea's first nuclear unit came on stream in 1978, is sufficient to complete the Bushehr power plant.

KOPEC, an engineering company for nuclear power plant projects, is to decide whether to take over the project soon, based on the survey result, a KOPEC official said.

The 1.2 million kilowatt nuclear unit, for which ground was broken in 1976, was 70-80 percent completed when construction was suspended in 1980 by West German company, KWU (Kraftwerk Union). It was badly damaged by an air raid in the Iran-Iraq War.

If Korea is to take over the project, it will become the first shipment of Korea's nuclear technology abroad. But officials are not optimistic about the survey result and say Korea may have to run the risk of suffering losses from the project, pointing out that a world-famous nuclear company, like KWU, abandoned the project.

At the heart of the controversy on the way to agreement between Korea and Iran surrounding the project are Iranian payment of the construction costs and the political situation in Iran, they say. "Extensive negotiations will be needed between the two countries to resolve these problems. We will present proper demands to the Iranian side in connection with the project and if the Middle East country accepts our demands, we will participate in the project," a KOPEC official said.

After the cease-fire of the Iran-Iraq War last year, Iran asked KWU to complete the abandoned project but both sides failed to reach an agreement as the West German company demanded huge construction fees, equivalent to the building of a new nuclear power station.

In a bid to upgrade the nation's nuclear technology, KOPEC began to participate as a subcontractor in the design engineering of the nation's fifth nuclear power plant and has been transferred nuclear technology from prime contractors such as Westinghouse and Combustion Engineering of the U.S. and Framatome and Alsthom of France.

CZECHOSLOVAKIA

Demonstrators Protest Kecerovce Nuclear Plant

AU2702142390 Bratislava PRAVDA in Slovak
21 Feb 90 p 2

[CTK report: "Against the Nuclear Plant"]

[Text] Kosice—A protest demonstration against the construction of the nuclear power plant in Kecerovce, and against nuclear power technology in general, organized by Ekoforum, attached to the Public Against Violence movement, was held in Kosice yesterday. As the main arguments against the nuclear plant, speakers put forward the high population density in the plant's vicinity (some 400,000 people), the severe shortage of water in the Kosice basin, the nuclear waste problem, and others. They proposed a new power technology program based mainly on cutting down power consumption in the economy and a more intensive utilization of alternative sources. They also demanded full and truthful information for the public on the state of preparations for construction in Kecerovce and a referendum on its future destiny. At the end of the meeting a petition to the Slovak government was read; the petition has been signed by 35,000 Kosice citizens and demands a moratorium on the entire project.

Minister Advocates Phasing Out Nuclear Power

AU2702172090 Vienna DIE PRESSE in German
27 Feb 90 p 4

[Interview with Environment Minister Bedrich Moldan by Michael Lohmeyer; place and date not given]

[Excerpts] [Lohmeyer] In northwestern Bohemia the gap is widening between environmentalists and those who fear for their jobs in the coal mines. How can these tensions be eased?

[Moldan] The situation in the Erzgebirge mountain range is indeed not very good. However, the most difficult problem really lies somewhere else. The people in northwestern Bohemia, who suffer most from the sulfur dioxide emissions, are losing their patience. They have the illusion that one could quickly improve the environmental situation and they are convinced that, at the cost of their health—and sometimes even their lives—energy and products are produced there for the rest of the CSSR citizens. [passage omitted]

[Lohmeyer] Let us now talk about nuclear energy: Do you personally support the further development of nuclear power plants?

[Moldan] Of course I would prefer it if there were not any nuclear power plants at all. However, we must put up with this reality. Thus, it would not make any sense to demand the immediate and absolute abandoning of nuclear power, nor would it make much sense to continue as in the past. This leaves us with three other

possibilities: Do not complete the half-finished plants and shut down the two nuclear power plants that already work (Bohunice and Dukovany); or connect Temelin and Balhuty to the grid, with the condition that we completely phase out nuclear energy within three decades. Finally, the third alternative: We continue to advocate this form of energy and develop a safe technology. I am rather in favor of completing what we have begun and phasing out nuclear energy after a transition period. [passage omitted]

Suva Advocates Nuclear Power for Energy Needs

LD0103173490 Prague Domestic Service in Czech
1844 GMT 28 Feb 90

[Remarks by Jaroslav Suva, minister of fuels and power, at the Federal Assembly session in Prague—live]

[Excerpts] Members of the [Federal Assembly] Presidium, deputies. Allow me to briefly respond in summary form to the comments raised about the activity of the fuel and power industry. As you know very well, the industry is in a very complex situation, because our economy is highly energy-intensive, and considerable funds have been used to meet demands, in some cases even to the detriment of the health of the working people, as has been pointed out here in the case of deep-mine extraction; this activity also has a far-reaching impact on the environment, and is therefore the subject of extensive criticism. [passage omitted]

As has already been stated, we intend to develop the nuclear power program and gas supplies as the two main directions for meeting our energy needs in the immediate term. At the same time we do not intend to abandon the idea of using other small renewable and nontraditional energy sources. Experience from other countries—for example, Denmark but also other states—shows that these can also play a part in resolving the energy problem.

Now a few comments on nuclear energy. I would also like to thank those who raised critical remarks on nuclear power, because I think they were motivated by the need to ensure that the nuclear power program is as safe as possible. That is something in which we all have an interest. We explained the problem of the development of nuclear power engineering and its environmental ramifications in detail at the session of the Federal Assembly's Environmental Committee. On the issue of spent fuel, I can tell you our spent fuel is stored for three years in a spent fuel pond at the nuclear power station. It is then taken to a store at Jaslovské Bohunice, and after a short storage period in that facility it is taken to the Soviet Union, under the intergovernmental agreements with that country, for final disposal. This applies to the problem of the fuel from the A-1 station [at Jaslovské Bohunice]. On the question of the construction of the nuclear power stations at Mochovce and Temelin, the situation is not very satisfactory because there are known problems with the automated control system, which we

must resolve. We are dealing with this situation now, and we will carry out or propose measures to improve this unsatisfactory situation. As for the question raised by Mrs. (?Parchanova) related to the incident at Jaslovske Bohunice, it must be said that in this case there was no threat to nuclear safety, the operational regulations were not violated, and the fire brigade's intervention was essentially preventive. [passage omitted]

Calfa Inspects Progress at Nuclear Project

LD0803102290 Prague Domestic Service in Czech
1430 GMT 7 Mar 90

[Text] Federal Premier Marian Calfa arrived today at the building site of the nuclear power station in Temelin. He was informed about the current course of the building work by Frantisek (?Poukar), director of the power station.

Marian Calfa acquainted himself with the building site, inspecting the buildings to be used for social use. He went through the entire first unit and spoke to the builders. He said that the first two units are to be finished. The others will be decided on the basis of the solution of the Czechoslovak power production conception.

The premier then inspected the water project under construction in (?Snevkovice) through which the nuclear power station will be supplied with water.

At the afternoon activ, Fuel and Energy Minister Jaroslav Suva said that in the future nuclear power stations should substantially help not only power production but ecological problems as well. He also spoke about the measures toward reinforcing the safety of Temelin power station.

GERMAN DEMOCRATIC REPUBLIC

Greifswald Nuclear Power Plant Shut Down

Block 2 Shut Down

LD1602111190 East Berlin ADN International Service
in German 1919 GMT 15 Feb 90

[Text] Rostock (ADN)—Block Two of the Greifswald nuclear power station has been shut down. The GDR Office for Nuclear Safety and Radiation Protection has ordered the shutdown in order to carry out a repair planned for 1990 ahead of time. This was announced to ADN today by Office Vice President Professor Helmut Rabold in response to an enquiry. The decision to take Block Two out of the grid was based on a safety review of the pressure vessel material. The review was carried out by GDR specialists together with experts from the USSR and the FRG.

'Not Seriously Compromised'

LD1602220490 East Berlin ADN International Service
in German 1807 GMT 16 Feb 90

[Excerpt] Rostock (ADN)—Nuclear safety and radiation protection in the "Bruno Leuschner" nuclear power station near Greifswald (Rostock area) were not seriously compromised either in the accident at the end of 1975 or by a series of minor events in the years 1988-89. This conclusion was reached by eight scientists of a commission from the International Atomic Energy Authority in detailed analyses that had been requested by the GDR after accusations by the FRG magazine DER SPIEGEL. [passage omitted]

Further on Plant

AU1802192790 Frankfurt/Main FRANKFURTER
RUNDSCHAU in German 17 Feb 90 pp 1-2

[Charima Reinhardt report: "GDR Switches Off Greifswald Three"]

[Text] Bonn—Now the GDR wants to switch off two of the four blocks of the Lubmin nuclear power plant near Greifswald. Thus, it follows a recommendation by Environment Minister Toepfer (Christian Democratic Union—CDU). Toepfer based his proposal on an interim report by the Society for Reactor Safety, which he presented in Bonn on 16 February. After the closure of Block Two was announced on 14 February, Block Three is planned to be temporarily switched off in March, according to the Office for Reactor Safety and Radiation Protection in East Berlin.

The Society for Reactor Safety has ascertained considerable shortcomings with regard to the safety regulations of the entire plant. As the danger that the weldings in the nuclear section of the reactors' pressure tanks in Blocks Two and Three might break is increasing, "the interruption of the operations of these blocks is recommended to clarify open technical questions," it is stated. Reportedly, the danger is not so great in Block Four. According to Toepfer, the GDR will also put this block out of operation for a routine exchange of the fuel elements and for repairs.

Thus, as from March, only Block One of the nuclear power plant, which accounts for 10 percent of the GDR's energy supply, will be in operation. The reactor's pressure tank has been heated to mend fissures in the steel. According to the Society for Reactor Safety, this method is "basically suited" to remedy the steel's embrittlement, but it has "not been completely substantiated" to what extent this has been achieved so far. In this respect, further investigations are necessary.

Toepfer stressed that he cannot give a safety guarantee for the whole plant. Experts will continue their examinations until April on whether it is at all possible to retrofit the nuclear power plant. Toepfer proposed to take the Buschhaus and Offleben coal power plants out of the FRG power supply system to substitute for the

lack of energy and to supply the GDR with energy by the so-called island system. In this way, approximately 600 megawatts could soon be delivered to the GDR.

Safety Issues Noted

AU2102152990 East Berlin NEUES DEUTSCHLAND
in German 17-18 Feb 90 p 2

[ND report: "Nuclear Safety in Northern Nuclear Power Plant Never Seriously Endangered"]

[Excerpt] [passage omitted] At a news conference in Lubmin on 16 February, IAEA [International Atomic Energy Authority] Vice President Dr. Morris Rosen (United States) explained details of the safety of the Greifswald nuclear plant. From 1988 to 1989, a total of 1,191 irregularities in the operations of the four blocks were registered in the nuclear power plant, but only six of them were minor safety-relevant events, according to the IAEA regulations. Even the cable fire of 1975 only belongs in category three of the six-level scale. Thus, during the whole period under examination, there was not a radioactive emission or serious danger to the population, it was stated.

In answer to the question from NEUES DEUTSCHLAND on whether the closing of Block Three is also envisioned after the early closing of Block Two, Director General Dr. Reiner Lehmann stated: Block Two will be thermally "healed" by the end of April. In close cooperation with Soviet nuclear experts, it is planned to immediately continue with Block Three in May and June.

Damage in Plant Noted

AU2302094190 East Berlin NEUES DEUTSCHLAND
in German 21 Feb 90 p 1

[ND report: "Damage in Nuclear Power Plant Repaired After Two Hours"]

[Text] Rostock—Following cable damage at the nuclear power plant north near Greifswald, Block Four was taken out of the grid on 20 February, ADN reported at 1918 [1818 GMT] hours. No further details were given by the Rostock Area Council. NEUES DEUTSCHLAND area correspondent Wolfgang Brune called the director of the "Bruno Leuschner" nuclear power plant that same evening.

He asked him about the incident. "There can be no talk of an incident. We merely had to shut down Block Four at 1800 hours because of external damage to a cable. What happened cannot be classified as an incident." Why was the cable damaged? "The cable was unintentionally damaged when measures to improve safety were carried out. At no point was the functioning of the work's security equipment impaired to the slightest extent. There was no leakage of radioactivity inside or outside the nuclear power plant." How long will it take to repair the damage? "It took two hours to repair the damage.

Block Four will assume full operation again by 21 February." Thus, no power switch-off for the population? "No, not at all."

Josef Krinke, who was on duty in the Ministry for Heavy Industry, confirmed in a telephone conversation with NEUES DEUTSCHLAND correspondent Matthias Loke that there was only damage to the distribution cable of the emergency power-generating plant, but that no damage was caused by fire. Nuclear safety was endangered at no point. The nuclear power plant employees and the inhabitants were not in danger.

Block 3 Shutting Down

LD2702232390 East Berlin ADN International Service
in German 1546 GMT 27 Feb 90

[Text] Berlin (ADN)—Block Three of the Greifswald nuclear power station is to be disconnected from the grid during the night of 28 February, the Ministry for Heavy Industry said on Tuesday. One was thereby reacting to recommendations from experts from the GDR and the FRG concerning a clearing up of technical safety issues for the further operation of this block. Block Two had been shut down, as already reported, on 14 February for the same reasons.

The statement further says that the heating supply for the town of Greifswald and the supply of electricity and energy in the GDR's northern area are being provided by Blocks One and Four, which are still in operation. The investigations concerning the safety of the nuclear power station blocks by experts from the GDR, the FRG, and the USSR are continuing. In April of this year, statements concerning a possible reconstruction or step-by-step closure of the blocks should be available.

Gysi Visits Greifswald Nuclear Power Plant

AU0603094690 East Berlin BERLINER ZEITUNG
in German 1 Mar 90 p 2

[ADN report: "Nuclear Power Plant: Blocks Were Not Shut Down for Good"]

[Excerpts] Greifswald—A few hours after the shutdown of reactor Block Three of the Greifswald nuclear power plant, Party of Democratic Socialism [PDS] Chairman Gregor Gysi visited the plant on 28 February.

He talked with the working people about the current concerns of the citizens of Greifswald, about the future of their jobs and of the town where 14,500 apartments and 45 enterprises are heated with energy generated by the nuclear power plant. General Manager Rainer Lehmann stressed that Blocks One and Four that are currently operating ensure long-term heating in Greifswald and the supply of energy to the north of the GDR. [passage omitted]

Lehmann stressed that Blocks One to Four should be operated under increased safety regulations and gradually be replaced by four considerably more modern

blocks with a new safety concept that are currently under construction or in the stage of planning.

Gregor Gysi warned against the hasty closure of the nuclear power plant as long as there are no acute safety risks. The PDS is in favor of a broad consensus on the future of nuclear energy that can only be achieved on the basis of expert knowledge, and advocates the convening of a European energy conference.

HUNGARY

Concerns Voiced on Slovak Nuclear Power Plant

LD1203115290 Budapest Television Service
in Hungarian 1800 GMT 11 Mar 90

[From "The Week" program; interviews with unidentified residents of the Bernecebarati area and a representative of the Mochovce nuclear plant; date and place not given]

[Text] [Announcer] The inhabitants of Bernecebarati and a good many other villages in Nograd County are concerned about a nuclear power plant. The power plant is being built in Slovakia, some 40 kilometers from the border. The region on both sides of the border is rife with various rumors, hearsay. This could have been avoided if those concerned had given appropriate information about the construction, but this did not happen right up to the beginning of this year. With our present-day outlook, we find it very hard to understand how the Czechoslovak officials at the time thought they could keep such a project secret. Precisely for this reason, "The Week" program sought an answer not to the question why, but what next?

[Reporter] There in the background, behind the hillside, on Slovak territory, is the nuclear power plant, which is now under construction. In Bernecebarati it has given rise to panic. Why?

[First speaker] It has given rise to panic because we know very little about its construction. We could say that we only found out about it when the chimneys emerged from the ground, and this lack of adequate information is inciting alarm here in the village, not only in the village but also in the neighboring villages along the Ipoly River. We tried to find out what kind of nuclear plant is being built, its capacity.

[Second speaker] What worries us is that once the nuclear power plant is built and the background radiation increases, it could happen, on the one hand, that it endangers our lives, and on the other hand, we might as well stop fruit growing here, because it is obvious that no one is going to buy fruit that has been affected by radiation.

[Reporter] Why are you so pessimistic? After all, nuclear power plants are being built in other parts of the world, too, even in our country—Paks, for example

[First speaker] Yes, we are well aware that the wheel of progress can't be turned back. The main source of the trouble, I think, is the total silence. In other words, not only we, but the villages on the other side as well, for a long time had no knowledge of the fact that a nuclear power plant was being built in the vicinity.

[Reporter] What is it you want?

[First speaker] That the measurements be carried out here, the (?zero) measurements, and that there should be constant continuous measurements here. We know that here in the region, in the Ipoly valley, they would like to build a (?nuclear) waste dump, which is dangerous mainly because our wells lie here in the area of the Ipoly. That is what we are afraid of. At long last we have managed to supply the villages here with good drinking water, and I think that there is fear about the water supply of these villages, both from the point of view of yield and from the point of view of infection.

[Reporter] How can it be that a nuclear power plant has been under construction in the vicinity of the Hungarian border since 1982 and you have only known about it for the last year?

[First speaker] There is no agreement between the two countries that would oblige the parties to give compulsory notification of this kind.

[Reporter] The construction of a nuclear power plant is not something that one wouldn't notice. I imagine that notifications have been made, but perhaps they have not reached you.

[First speaker] Yes, well, our scope of authority extends to the area of the border zone, to six kilometers from the border, so this lies outside that. The reports lodged by the inhabitants, however, have made it unequivocal to us that a nuclear power plant is being built. For this reason we have turned to the National Nuclear Energy Committee to take up contact with the competent bodies in Slovakia. We are already checking the (?zero) level, in other words, the background radiation values. The first reports on this have been completed. In practice it is a question of reactors that are to be put into operation in 1991. Naturally we are now only getting the natural radiation values. This work is being collated by the National Radiation Biological Institute, and the first partial reports have been completed.

[Reporter] Forgive me for interrupting you, but why don't you inform the population?

[First speaker] On 15 January there was a forum of the population in Bernecebarati, where we informed the local environment protectors about the results to date, and also, since the social changes, since December, the local inhabitants in Slovakia, too, have been getting appropriate information.

[Reporter] Now let us hear the leaders of the Mochovce nuclear power plant. What examinations were carried out before the location was selected? How safe is the power plant?

[Speaker in Slovak, with superimposed translation] Our nuclear power plant here in Mochovce was built after hydrological, meteorological, and geological examinations. A basic requirement is that it should be earthquake-proof. With safety regulations being observed, we also guarantee radiation protection. In the case of a fault, we can localize everything immediately.

[Reporter] Where will the dangerous waste dump be based?

[Speaker] The radioactive waste dump is to be built four kilometers from the nuclear power plant; it will have a capacity of 43,000 cubic meters. This will ensure waste burial for 12 years. We will collect waste here not only from the Mochovce power plant; high-grade radioactive waste from the Jaslovske Bohunice nuclear power plant will also be taken there. But I can reassure you that the burned-out heating elements will only be there for a short time. We are also building a waste reservoir in the heart of the nuclear power plant, (right next to) the reactor.

[Reporter] It is said that the water of the Ipoly region has become endangered because of the nuclear power plant.

[Speaker] I would like to correct the question. It is not a question of the Ipoly River. We take the cooling water for the power plant's operation from the (Hron). For that reason we have built a water reservoir. With that we cool the turbines. Because of our water shortage we use a closed-circuit cooling system, unlike the Paks power plant, which is next to the Danube, from which water for cooling is taken.

[Reporter] Why has this nuclear power plant been built in such secret? People have complained that there was precious little information.

[Speaker] I imagine that the Mochovce power plant was not built in secret. At all events the experts must have known what was being built there. The development of the construction is known generally in our country. As for how well known it is beyond the borders, that I don't know. We have now organized an information group here in Mochovce concerning the nuclear power plant. Their task is to give information, publicly, to the neighboring population. We would want the population to have no doubt whatever in connection with the operation of the nuclear power plant.

[Reporter] The first briefing has been held in Bernecebarati. The experts came from Slovakia. The people of the tiny hillside village have taken cognizance—for what else could they do—of the fact that after 1991, in the near neighborhood, a nuclear power plant will begin operation.

ROMANIA

Nuclear, Hydroelectric Power Potential Assessed

AU0503192890 Bucharest ROMPRES in English
1732 GMT 5 Mar 90

["The Economy: Power Plants"—ROMPRES headline]

[Text] Bucharest, ROMPRES, 5/3/1990—Two personalities of the Romanian technical life on the two chances of Romanian power engineering: nuclear power plants and hydroelectric stations.

Mr. Ionel I. Purica, professor in the Bucharest Polytechnic, and Mr. Radu Scutelnicu, general manager of the Hydraulic Construction Institute in Bucharest, say Romanian power engineering could be led out of the current crisis by furthering the nuclear and hydroelectric projects started before.

Eleven years have passed since construction works started on the nuclear power plant at Cernavoda and we need a few more years to put it on line. A period spanning ten-to-fifteen years for the building of a power plant in Romania is not much if we think of the U.S.A., for instance, where the time needed to build such a plant—in conditions in which designs are merely taken out of a desk drawer—is ten years, said Professor Purica. The fact should be considered that this is the first like plant to be built in Romania, in cooperation with Canada. Furthermore, the old dictatorial regime wanted all equipment assimilated in this country to an ever larger extent. The nuclear one included. Which is not wrong, of course, all the more so as we do boast an industry apt to adapt itself to such production. The only problem is that for such an adaption to occur sufficient time should be granted for a quality production, which was not the case before, when the dictatorship fixed "mobilizing" terms. A sufficiently long time is needed because the Romanian nuclear-power programme is more complex than that of other countries. Its major gain is the creation of an elite technical and engineering staff, which should be further trained in Canada and urgently for that matter as assembly works got under way on the first roughly 700-mw generator set and fuel loading and technological tests will take a year each.

It will be easier to put the other four sets on stream considering the experience acquired on the first generator set. As for the machine that will load nuclear fuel into the reactor and which is expected to be built in Romania there is need for closer cooperation with the Canadian side. The heavy water needed for the operation of the "Candu"-type plant could be produced at the chemical combine in Drobeta-Turnu Severin, on which construction works have entered an advanced stage, or could be imported.

As for waterpower engineering, fifty hydroelectric stations with generating capacities ranging from 5 to 180 mw (and totalling 1,250 mw) are under construction at present, says Radu Scutelnicu. In the case of half of them

construction works are two to-five years late, for the most diverse reasons, of which the most serious are the groundless cuts in material consumption (by 50 per cent) effected by the supercentralized economic body of this country, the former State Planning Committee. Adding to all this are the equal pay for construction workers, which severed initiative from its roots, and the difficult living conditions on construction sites. All this notwithstanding, hydroelectric stations are still being built, he said, as the cost of a kilowatt per hour generated in like plants remains in the 0.10-0.12-leu bracket. There are also machines and equipment on

construction sites but they are used in a proportion of 50 per cent, as the rest is physically and morally degraded. The drastic cut in megalomaniac investment would channel a large mass of people towards hydropower sites and would step up the pace of so necessary a project.

At present, Romania hardly makes do with the units it has in operation and which total slightly over 10,000 mw. A faster pace of construction works on the nuclear plant and on hydroelectric stations could alleviate the serious energy crisis in the economy.

ARGENTINA

Import of Equipment for Nuclear Plant Authorized

*PY0103205890 Buenos Aires Domestic Service
in Spanish 1500 GMT 1 Mar 90*

[Text] The executive branch has authorized the National Atomic Energy Commission to temporarily import, for the period of 10 years, (Slares) equipment, which will be rented from Atomic Energy of Canada, Ltd.

The equipment will be used in positioning and repositioning the rings that separate the fuel channels at the Embalse nuclear plant.

Embalse Nuclear Plant Working, Atucha I Down

*PY2702133690 Buenos Aires TELAM in Spanish
2102 GMT 25 Feb 90*

[Text] Buenos Aires, 25 Feb (TELAM)—According to the Atomic Energy National Committee (CNEA), the Embalse nuclear power plant in Cordoba is functioning again and supplying energy to the National Interconnected System, following completion of repair work that kept it off line last week.

The CNEA report adds that at 1430 yesterday, when the Embalse plant was connected to the National Interconnected System, the Atucha I nuclear plant was disconnected for inspection and analysis of repairs made in the nucleus of the reactor.

The Atucha I plant went into operation about 45 days ago. To inspect the repairs made, and to implement the programs for the complete normalization of the plant's operation, Atucha I will be off line for about one week. Maintenance and corrective work will also be done.

INDIA

Reportage on Appointments of Ramanna, Iyengar

Ramanna: Father of Bomb

51500081 Calcutta THE TELEGRAPH in English
28 Jan 90 p 9

[Article by S. Srinivasan and Shubha Singh in Delhi, Lekha Dhar in Bombay and Pathik Guha in Calcutta]

[Text] When India set off an underground nuclear explosion in Pokhran in 1974, the coded phrase used to announce its success was: "The Buddha is smiling." Sixteen years later, with the appointment of Dr. Raja Ramanna as minister of state for defence, the question being asked is: "Is the Buddha smiling again?"

Dr. Ramanna, scientist, teacher, innovator, philosopher and concert-level pianist, is the father of the Indian bomb. His appointment has evoked extreme reactions with one section seeing it as confirmation of India's plans to go nuclear the whole hog, and the other dismissing it as "too much being read too soon."

The internationally renowned scientist who has done extensive work in nuclear physics with special reference to fission, was the leader of the group behind the peaceful nuclear explosion at Pokhran. The Prime Minister, Mr. Vishwanath Pratap Singh, who has personally chosen Dr. Ramanna for the post, seems to be sending several signals at one go: the scientists and scientific establishments will continue to get support, and that indigenous research and production in the defence sector will be strengthened. It will restore the sagging image of the defence department. But given Dr. Ramanna's background, his appointment will also spark off speculation as to whether India has decided to exercise the nuclear option, which it has always kept open. What adds substance to such speculation is the promotion of another brilliant nuclear physicist, Dr. P.K. Iyengar, to the post of chairman, Atomic Energy Commission.

The former director of the Institute for Defence Studies and Analysis, Mr. K. Subrahmanyam, who is known for his hawkish posture on the bomb, does not believe that Dr. Ramanna's appointment is aimed at sending any kind of message to the world. According to him, if India had at last decided to go nuclear then it could have sent Dr. Ramanna to the research laboratories of Trombay "instead of asking him to shuffle papers in the South Block."

But, said an American diplomat, "What else do you mean to imply when you place these two persons associated with the Pokhran device in such positions, and even give one of them a political appointment in the defence ministry."

In recent weeks, there has been an increasing bellicosity in the statements emanating from Islamabad. The Pakistani army establishment is reported to have assessed that the next war with India would have to be fought on Indian soil.

The upsurge of Pakistani involvement in Kashmir in recent weeks is a fallout of the shifting balance of power in Pakistan, with the all powerful ISI (inter-services intelligence) and chief ministers Nawaz Sharif in Punjab and Sardar Abdul Qaiyum Khan in Pakistan-occupied Kashmir (POK) operating largely on their own.

The nuclear signal will soften the belligerent postures in Pakistan. A nuclear bomb has its own jingoistic appeal to many sections in this country. The BJP has been strongly in its favour and the appointment of Dr. Raja Ramanna further strengthens it.

Even if the government is not planning to exercise the option to go nuclear, this is an interference that will be made in most of the capitals throughout the world, said a senior foreign office official. The changing world situation—from the lessening of tensions after the Malta summit and upheavals in East Europe to the violent upsurge in Azerbaijan and earlier events in China—makes it a time when a fresh threat assessment of the immediate environment has to be made. The developments in the Soviet Union make it necessary to reassess reliance on the Soviet nuclear umbrella.

For the Indian Army there is a signal that the new government is committed to a modern, scientifically equipped army and a continuity in the defence research area. Despite the National Front's soft, doveish appearance—largely the result of its thrust to improve relations with neighbouring countries—there will be no deviation of purpose where national interest or security is concerned.

It is in this context that officials read significance in India's strong message to the visiting Pakistan foreign minister, Sahebzada Yaqub Khan, that "whatever be the costs, we will ensure that Kashmir remains an integral part of India." Dr. Raja Ramanna's induction in the Cabinet is a signal from the new government that the defence of the country will remain the highest priority. And it is also a firm signal to Pakistan that the nuclear option remains open.

While political convenience and expediency may have been one of the primary reasons for Dr. Ramanna's induction, taken with the appointment Dr. P.K. Iyengar the signal to Pakistan becomes a stronger one.

Dr. Iyengar himself is all praise for Dr. Ramanna: "He is the best man to give advise to the government of India on defence." But he also feels that the appointment has no connection with or relation to the advance of nuclear science in India. Defence is a different department."

Asked whether there will be any change in India's nuclear policy, Dr. Iyengar said: "His ideas on nuclear

science are well known." But, said a BARC scientist who wished to remain anonymous: "Given a choice he would be biased to nuclear options. Subconsciously he may make a choice for it. If all my life I was involved in such an area, the choice would be natural." He added that unlike others, Dr. Ramanna would also be aware of the cost involved. The figures are enormous, and most people are not aware of how much would be required.

While no clear figures are available, international defence journals roughly calculate the cost of going nuclear by assuming a 10 per cent of the total defence budget. In India, nuclear and space programmes are not linked and even then it would cost around Rs 1,300 crores. The delivery systems are yet to be developed. The development of Agni as test intermediate range ballistic missile is being considered as a first step towards conventional strategic weapons. For the nuclear delivery systems some periodicals have suggested that India could use Mirage 2000s. But these can carry only small weights of 1,000 pounds each. Pakistan has tested surface-to-surface missiles and is trying to acquire F-16s which can carry heavier loads.

In official jargon, India's nuclear policy represents "one of the nation's frontline ventures at the cutting edge of its technological and scientific progress." Analysts feel that the Indian government would not do anything to dispel that impression. But those who are opposed to the bomb are not ready to accept this argument. According to them the government has buckled under pressure from the BJP, which has always preferred the nuclear option.

Many believe that Dr. Ramanna's appointment is not meant to send any signals. For, after all, a decision on whether to go nuclear would ultimately rest with the politicians.

Said the official spokesman of the Janata Dal, Mr. Jaipal Reddy: "The appointment of Dr. Ramanna is not meant to convey any signal." As far as his party's policy on India going nuclear is concerned, "the option is open." He said Dr. Ramanna has been appointed defence minister because Mr. V.P. Singh has a "certain weakness" for scientists and believes in the indigenous development of science and technology.

External threats apart Dr. Ramanna's appointment is expected to revive the old controversy of indigenous versus foreign technology. Says a senior official in the department of atomic energy, "When Dr. Ramanna was DAE chairman he was known to be a protagonist of developing India's indigenous nuclear power plants. Today, our nuclear power plants have zero import content." Says Prof Virendra Singh, director of the Tata Institute of Fundamental Research: "They (Prof M.G.K. Menon and Dr. Ramanna) are not people of narrow perspective. They have a vision of science and technology on a wide front. These people are able to understand which areas need support. It is definitely better than having a non-scientist at the helm of affairs. What one wants is critical assessment and rational support for

scientific advancement and this a scientist is best able to understand, whatever the field or area under consideration. Support for the sake of support won't help."

Dr. Ramanna and Dr. Iyengar worked together on several nuclear reactor projects and were protagonists of indigenous capabilities. They opposed the move to import Soviet reactors, which the outgoing DAE chairman, Dr. M.R. Srinivasan, was in favour of.

The induction of Dr. Ramanna and the appointment of Dr. Iyengar signals a comeback of the scientist lobby. The atomic energy establishment has been divided into two lobbies representing pure scientists and engineers. In July 1978, when the squabble among them came to a head, Dr. Ramanna was virtually shifted overnight to the defence ministry by the then Prime Minister, Mr. Morarji Desai. Dr. Homi Sethna was the chairman of AEC.

In 1983, when Dr. Sethna retired Dr. Ramanna took over as the head of the establishment. But Dr. Ramanna fell out with Mr. Rajiv Gandhi over the government's decision to go in for Soviet reactors. The Indian nuclear power reactors have been based on pressurised heavy water technology and the Russian reactors use light water technology which need enriched uranium. The government's decision had upset the scientific community as it implied their failure. The government was virtually importing reactors and getting them installed on turn-key basis. Dr. Srinivasan went along with the decisions on import of Russian reactors and argued that it was important to achieve the 10,000-mw target sketched for the AEC by the turn of the century. Although there has been a string of successes in nuclear research, the energy generation has not been so promising.

With the return of Dr. Ramanna and Dr. Iyengar the process is likely to be reversed. Dr. Iyengar significantly has now said that development of "indigenous technology" will be given top priority. The defence ministry officials now fondly hope that with the installation of Dr. Ramanna as their minister, at least indigenous research will get a fillip. On the political side, the induction of Dr. Ramanna as minister of state for defence and of Prof M.G.K. Menon as minister of state for science and technology is an extremely shrewd and well-thought out move. The Union Cabinet needs to be expanded, and any expansion would mean hectic lobbying and factional arm-twisting as each group will try to get a larger share in the Cabinet. Prime Minister V.P. Singh will find it difficult to expand his team without upsetting the apple-cart, and he has to carry all the factions with him in view of the coming Assembly elections. The outcome of the elections will provide a clearer estimate of the strengths of the various leaders in party.

Appointing non-political but eminent scientists from the South also has the effect of changing the balance within the Cabinet from the greater number of members from

the Hindi belt. Instead of relying on a coterie of managers, Mr. V.P. Singh has chosen mature, seasoned scientists of proven abilities.

A significant point is that both the appointments are in ministries that Mr. V.P. Singh plans to keep for himself. As for Mr. V.P. Singh's policy options, it all depends on how much money he can allocate to departments headed by Dr. Ramanna and Prof. Menon. A clear indication can only emerge in the next Union Budget.

Signal to Pakistan?

51500081 Madras *THE HINDU* in English
25 Jan 90 p 9

[Text] New Delhi, Jan 24—It will not come as a surprise if the appointment within one week of each other, of Dr. Raja Ramanna as the Minister of State for Defence and today of Dr. P.K. Iyengar as the Chairman of the Atomic Energy Commission, is viewed around the world as a signal that India has moved a step closer to becoming a nuclear weapons power.

The team of Dr. Ramanna as the then Chairman of the AEC, and Dr. Iyengar as a leading scientist, had planned and executed the Pokharan nuclear test in 1974.

Sources close to the two scientists, note that while such a construction is not realistic they do admit that it would be difficult for powers suspicious of India not to ascribe motives to the appointments. They argue that, at worst, Dr. Ramanna's appointment as Minister of State, could be ascribed to whimsy, but given his qualifications and record of service he was a good choice to look after defence, considering the paucity of expert talent in the National Front Government. In the case of Dr. Iyengar, who has been given a three-year term in his new appointment, he was, besides being the Director of the Bhabha Atomic Research Centre, the seniormost official in the Atomic Energy Establishment to succeed the outgoing Chairman, Dr. M.R. Srinivasan.

Capable Men

While no confirmation can be possible, there are reasons to believe that the Government of Mr. V.P. Singh did indeed intend to convey a signal to Pakistan by these appointments. Even if the decision on the appointments has taken on completely different considerations, and that there is in fact no decision to qualitatively change India's nuclear weapons posture. Mr. Singh can have the satisfaction of appointing two capable men for the job and sending an important signal to potential adversaries. It may be recalled that both officials were reported to be out of favour with the previous government for their opposition to the import of a Soviet nuclear reactor whose detailed project report is yet to be prepared and approved.

At this juncture, besides the pressure of the BJP, the Prime Minister himself has been assessing the security situation of the country. Apart from the alarming internal developments in Punjab and more so Kashmir,

Mr. Singh has also had to factor in the new Pakistani bellicosity. However, the key factor in conveying a signal that the government did intend to keep its nuclear powder dry is the situation in the Soviet Union. The Indo-Soviet Treaty of 1971 provided India considerable cushion with regard to potential nuclear threats from Pakistan or China. However, with the Soviet Union in the throes of change, and indeed on the possible brink of anarchy, it was felt that India would have to look at alternate scenarios.

For the past five years, the Government has waxed hot and cold on the Pakistani nuclear programme. While the Government has routinely described the Pakistani activity as "alarming" and has expressed "concern" at various quarters, it has also declared its intention to do all that is required to counter the development. However, the new Government may have felt that the time had come to do something more than provide reassurance through statements inside or outside Parliament.

U.S. 'Certification'

All said and done, the annual certification exercise carried out by the U.S. Administration with regard to the Pakistani nuclear programme has appeared farcical. This is cold comfort for India and all that the U.S. had to say with regard to the Indian plaint was that both India and Pakistan could sign the Non-Proliferation Treaty and eliminate their mutual suspicions.

However, the fact that there was little by way of pointers or even complaints about Indian activity in this area from the U.S. Administration or the establishment press, may point to a degree of complacency on the part of the Indian security establishment. There have been those who have argued that the Pakistani programme was a sham. However, the record of smuggling activities, the U.S. certification exercises themselves and nearly two decades of activity cannot be dismissed easily and India has to work under the assumption that Pakistan does indeed have a "bomb in the basement" or close to having one.

Iyengar Takes Over as Atomic Energy Commission Head

Iyengar Appeal, Srinivasan Speech

51500082 Bombay *THE TIMES OF INDIA* in English
1 Feb 90 p 3

[Text] Bombay, Jan 31—Dr. P.K. Iyengar today took over as the sixth chairman of the Atomic Energy Commission and the secretary to the government of India, department of atomic energy.

He succeeds Dr. M.R. Srinivasan.

Immediately after taking over, he appealed to students to join the atomic energy organisation in large numbers to strengthen the country's industrial power and economy. In a statement, he said: "To young entrepreneurs and

industries we offer technology transfer based on indigenous development which is the surer method of beating obsolescence in the years to come."

"There are tremendous opportunities for spin-off from the research and development units of the department. Science and science alone can bring about a harmony and a sense of unity among diversity, the very essence of our cultural heritage. There is thus a need to grow in our capability in science and technology to assure the common man a better standard of living for the future," his statement said.

He recalled that he entered the building (Old Yacht Club near the Gateway of India) as a young man of 21 in 1952. "I am glad to be back here at the helm of affairs after 38 years. The department of atomic energy has grown over the years, spread across all parts of the country. I send my greetings to all in the department of atomic energy," he said.

Dr. Iyengar, who has been at the forefront of total indigenisation of nuclear science and technology, appealed to students in professional courses, whether it was medicine, engineering, science or biology, to recognise the fact that India offered tremendous opportunities. Education in colleges, he said, was only the beginning of scientific training. "It is the first 10 or 20 years of active life that makes a person a scientist or engineer," he said.

The department of atomic energy offered a variety of opportunities from basic research in nuclear and particle physics to cosmology, molecular biology to engineering disciplines including mining and material production to sophisticated nuclear power reactors associated systems. "The immediate gains should not be the objective in seeking a career, but to see what the involvement today offers in the future," he said.

Sources in the DAE said here that Dr. Iyengar would continue as the director of BARC until a successor was found. This would be done shortly.

Dr. Iyengar also stated that in the next few years the department of atomic energy would concentrate on increasing nuclear power production. This programme was already under way and special efforts and resources would be diverted to ensure speedy completion of ongoing projects and timely delivery of critical components. High priority would be given to 500 megawatt units.

"The support required for nuclear programmes in various steps of the nuclear fuel cycle would be evaluated realistically and with ingenuity and innovativeness," he said.

The department was also involved in many other activities like radio-isotopes production and utilisation which were vital for peaceful uses of atomic energy. "The department will increase the impact of these developments on society," he said.

According to him, the safety record of the department was excellent. This was because of very large scientific inputs into the field of safety and environmental protection. Constant monitoring and evaluation of data was the secret of success in the area, he said.

"Not only will we maintain this excellent record but we will also strive to communicate with society and make them appreciate our capability and involvement in this area. Environmental protection will be the top priority in this programme," he added.

The outgoing chairman, Dr. M.R. Srinivasan, today stressed the need for a technologically and economically successful development programme that was done on a self-reliant basis.

Speaking at a farewell function at the Bhabha Atomic Research Centre here today, Dr. Srinivasan said that the law of technology and economics were inexorable and "we must come to terms with them." He said that it might be possible to cross-subsidise when one had a small programme of demonstration type.

Outlining the challenges on the research and development front, Dr. Srinivasan said that the first priority should be to solve issues in support of the 10,000 megawatt nuclear power programme and projects for the production of special materials such as heavy water and fuel.

It is no secret that the relations between Dr. Srinivasan and Dr. Iyengar have not been on an even note all these years. They had strong differences of opinion on a number of issues. While Dr. Srinivasan represented the engineers' lobby, Dr. Iyengar spoke for scientists. Dr. Raja Ramanna, now the minister of state for defence, backed Dr. Iyengar for the post of the AEC chairman, when he retired in 1987.

But, the choice fell on Dr. Srinivasan.

Both Dr. Iyengar and Dr. Ramanna formed a formidable but excellent team during the Pokhran nuclear implosion in May 1974. Now with both of them occupying key positions in the country, it has triggered speculation that the country's future nuclear programme could be weapon-oriented—a fact, however, denied by Dr. Iyengar in a recent interview to this paper. All the same, their appointment is being interpreted as a signal and warning to Pakistan.

Apart from the Pokhran implosion, both Dr. Ramanna and Dr. Iyengar worked together on several nuclear reactor projects and were protagonists of indigenous capabilities. They opposed the move to improve Soviet reactors, which the outgoing AEC chairman, Dr. Srinivasan, was in favour of.

The induction of Dr. Ramanna and the appointment of Dr. Iyengar marks a return of the scientist lobby in the country.

Interview With TIMES

51500082 Bombay THE TIMES OF INDIA in English
28 Jan 90 p 6

[Text] Bombay, Jan 27—The chairman-designate of the atomic energy commission, Dr. P.K. Iyengar, said here on Thursday that the main thrust of his programmes would be to see how to achieve the target 10,000 megawatt (MW) of nuclear power by 2000 A.D.

Speaking to THE TIMES OF INDIA here in his office at the Bhabha Atomic Research Centre (BARC), he said that the ambitious programme, apart from involving the capabilities of various sectors and agencies, would also need environmental clearance.

"Fortunately, a large percentage of the site selection had been done and so we should be able to put the programme through," he said.

The eminent nuclear scientist, however, did admit that the problem of resource crunch had to be solved. "If the country needs nuclear power and realises its value there should not be any resources crunch at all," he said.

During the next two years, schemes would be evolved as to how to adhere to the target of producing 10,000 MW of nuclear power, he said.

Touching on some of the other programmes, he said emphasis would also be given on building the 500 MW reactor at Tarapur in the next three years.

Referring to the performance of the atomic power projects in the country, he said that while there was a problem in one unit of the Rajasthan atomic power project, the second one was functioning properly.

The Madras atomic power project at Kalpakkam was doing well, he said. In the initial stages of any new programme there would be problems, which according to him, was not unusual.

About the protests raised by environmentalists regarding the location of the Kaiga plant in Karnataka, he emphasised that "ecologically a nuclear power reactor did not disturb the balance of a system."

Contrary to what is often said, Dr. Iyengar said there was no radioactivity fall-out in the villages around the Tarapur atomic power project (TAPS).

Stressing the importance of high technology, Dr. Iyengar asked, "Should our future for our villagers remain backward or do we want to show them the torch and tell them as to what can be done in a scientific way? What we lack is information technology."

To prove this he said that a yellow folder in a secretariat will not help in diagnosing a problem which can instead be done by a computer.

Dr. Iyengar said high-technology has penetrated areas of space, missiles and atomic energy. In fact, Dr. Iyengar

was happy that a large number of persons who now belong to the country's space and missile programmes were originally with the BARC.

Explaining the importance of indigenisation, he said manpower cost of any project was nearly 60 per cent. This could be spent on local persons who could get employment rather than give the benefit of it to those employed in foreign agencies.

But, the question was whether Indian workmen had the advantage of automation and other high technology like their foreign counterparts which ensured a high quality work. Dr. Iyengar dispelled suggestions in certain quarters that his appointment as the chairman of the atomic energy commission and the choice of Dr. Raja Ramanna as the minister of state for defence would give a "weapons-related" thrust to the atomic energy programme.

"I am becoming the chairman because Dr. M.R. Srinivasan was retiring. On the other hand, Dr. Ramanna became the minister of state for defence because of political changes," he said. Dr. Iyengar came to know about his appointment at 7 p.m. on Tuesday.

He further added that the decision to appoint him as the next chairman of the AEC was taken much before a move was made to make Dr. Ramanna the minister of state for defence.

Singh Statement on Nuclear Weapons 'Ritualistic'

51500062 New Delhi PATRIOT in English
30 Dec 89 p 4

[Editorial: "V.P. Singh on N-Weapon"]

[Text] Prime Minister Vishwanath Pratap Singh's statement, that if Pakistan acquires nuclear arms, "it would have a profound affect on our thinking and we will have second thoughts" on India's peaceful nuclear programme, is ritualistic. This had been reiterated by the previous Governments ritualistically for over a decade. One does not understand why India's peaceful nuclear programme should be given second thoughts only if Pakistan acquires nuclear arms. Pakistan's nuclear ambitions have never been hidden. There is enough evidence to establish the military intent of Pakistan's nuclear programme, Pakistani protestations notwithstanding. In any case, Pakistan Premier Benazir Bhutto does not intend "to acquire any nuclear capability for the time being" only. Moreover, how can one neglect the threats posed by the presence of nuclear weapons powers in the region as also in the Indian Ocean? Cognisant of the realities of a world full of nuclear weapons, and its own national interests in the critical area of national security, India has so far sought to keep its nuclear weapon option "open". But such a stand does not take us very far. Mr. V.P. Singh's statement also does not answer the basic query about defence. Merely saying that we may have to take a second look at our peaceful nuclear programme is not enough. In fact it amounts to saying nothing. Either we should say that we are unilateralist and regardless of

one power or the other going nuclear, this country will abjure atomic weapons, or we should go ahead and acquire military nuclear capability. The Prime Minister has obviously chosen to play safe by basically sticking to the equivocation of the previous Government. The National Front in its manifesto has underlined the need for evolving an overall security doctrine for India which will take a total view of defence rather than a fractured service by service approach. The V.P. Singh Government would do well to spell out the security doctrine and explain how it meets the nuclear threat to our security.

India Ready for Nuclear Agreement With Pakistan

51500077 Calcutta THE STATESMAN in English
13 Jan 90 p 1

[Text] Islamabad, Jan 12—Both India and Pakistan have completed formalities for the exchange of instruments of ratification of the bilateral agreement on the prohibition of attack on each other's nuclear installations, reports PTI.

India now hoped that the ratification documents would be exchanged at a mutually convenient date "as early as feasible," said an Indian High Commission Press release here today.

Clarifying media reports which hinted at a delay on the part of India, the Indian High Commission release said that the Foreign Secretary, Mr. S.K. Singh, had on February 18, 1989, conveyed to the then Ambassador of Pakistan in New Delhi, Mr. Niaz A. Naik, that India had completed all relevant formalities and was willing to exchange the instruments of ratification at any time convenient to the Pakistani side.

This was reiterated during Mr. Singh's visit to Pakistan in June, 1989.

The release said it was only on October 23, 1989, that the then Foreign Secretary of Pakistan, Mr. Humayun Khan, informed the Indian High Commissioner, Mr. J.N. Dixit, that the Pakistan side had also completed the relevant formalities.

"It is hoped that now the instruments of ratification will be exchanged at a mutually convenient date as early as feasible," the release said.

The agreement on non-attack on each other's nuclear installations was signed between the two countries on December 31, 1988, during the visit of Mr. Rajiv Gandhi to Pakistan.

Article 3 of the agreement states that it is subject to ratification and shall come into effect from the date on which the instruments of ratification are exchanged.

Article 2 states that on January 1 of each calendar year the two sides shall inform each other of the latitude and longitude of its nuclear installations and facilities.

Policy Rethink Possible 'If Pakistan Goes Nuclear'

BK0803161290 Delhi Domestic Service in English
1530 GMT 8 Mar 90

[Text] The minister of state for defense, Dr. Raja Ramanna, today said that India might reconsider its nuclear policy if Pakistan goes nuclear. Speaking to newsmen at Visakhapatnam after inaugurating the 56-crore rupee north dry dock complex, Dr. Ramanna stressed the need for acquisition of modern technology and skills for the modernization of the Navy.

About tensions and relations with Pakistan over the Kashmir issue, he expressed the hope that an all-party meeting would provide some solution to it.

More Details on Bombay Nuclear Energy Seminar

Need To Convince Public

51500063 Calcutta THE STATESMAN in English
20 Dec 89 p 1

[Article by Shireen D. Mistry: "Glasnost in World Nuclear Industry"]

[Text] Bombay, Dec 19—A seminar conducted by the International Atomic Energy Agency [IAEA] and hosted by the Department of Atomic Energy at the Tata Institute of Fundamental Research in Bombay, primarily emphasized the need to "demystify" the nuclear industry in the public mind, and to meet public questions on the nuclear industry, mainly through the Press. Consequently, the seminar was held essentially for the Press, with representatives of the media and nuclear establishments from Iran, Pakistan and Bangladesh.

Basically a public relations exercise on behalf of the nuclear industry, the speakers attempted, with the standard clarifications, to project the argument that nuclear power was the most viable energy source for the future, and that the risks associated with nuclear plants were not as disastrous as might be thought by the people.

This "glasnost" on the part of nuclear agencies comes from a growing realization that public resistance to nuclear projects, especially in the USA and other parts of the West, is so strong that Governments might reject the nuclear option altogether unless the public can be made to view nuclear industry as no more risky than any other human activity.

The media and citizens of most countries have had an ambiguous attitude to nuclear power. In the initial stages, nuclear power plants were hailed as symbols of national technological advancement and superiority and as cheap, clean sources of generating much-needed power. Later, with unexpected escalation of costs, and accidents like those of Three Miles island in the USA and more recently, Chernobyl in the USSR, nuclear power is being considered unsafe by greater numbers of people.

Speakers at the seminar, including Dr. M. R. Srinivasan, director of the Atomic Energy Commission, and Miss Rita Scott, of the IAEA, admitted that the nuclear establishment in most countries had not bothered to build any rapport with the general public. Dr. Srinivasan pointed out that at the "crucial phase", when misgivings about nuclear plants was being expressed all over the world, "the nuclear establishment remained generally insular and remote and did not respond in an enlightened manner". Not surprisingly, this response only helped to make the "anti-nuclear movement" more organized and strong. Dr. Srinivasan advocated that the nuclear establishment should "take the media into confidence".

This approach was backed by Mr. Rostislav Beloded, head of the International Relations Department of the Ukrainian Academy of Sciences in USSR. Referring to the Chernobyl incident, he stressed the "particular importance of public information in such circumstances...competent, truthful and timely information" would greatly reduce public fears.

Miss Rita Scott of the IAEA also felt that the nuclear establishment had been insensitive to the genuine fears expressed by the general public regarding the industry. She quoted former Secretary of State for Energy, Mr. James Schlesinger: "It is not enough when developing a technology to make sure those who understand the technology should be satisfied. The politicians and the general public must also be satisfied."

Similarly, Mr. Peter Haug, executive director of the German Atomic Forum, was quoted as saying that over the next 10 years, the matter of public acceptance would be the single most important factor in determining the future of the nuclear industry.

Dr. Hans Blix, Director-General of the IAEA, felt that with the increasing impact of the greenhouse effect, the decreasing sources of power and energy on earth, nuclear power would have to become the option of the future, and that people should take a realistic view of its risks and potential in relation to other less viable options.

Mr. Morris Rossen, Director of the Division of Nuclear Safety of the IAEA, claimed that 70 per cent of radiation experienced by human beings came from natural sources, 29 per cent from medical sources such as X-Rays and one per cent from man-made nuclear sources. He said that at most, nuclear radiation was just one more of 300 known carcinogens.

He admitted that every radiation was associated with some harm but that there was insufficient evidence to conclusively prove that very small doses of radiation were fatally harmful. "The scientific community feels that every potential victim of the nuclear industry has to be protected at any price. That is not feasible. No industry works like that", he said.

All the speakers expressed the view that nuclear waste was not hard to dispose of safely. Mr. Rudolph Rometsch, former president of the Swiss National Cooperative for

Nuclear Waste Disposal, demonstrated methods by which nuclear waste could be safely embedded in chosen repositories beneath the earth's surface.

Miss Evelyn Shoketolowski of the Nuclear Training Safety Centre in Sweden spoke at length of the intricate layers of safety devices in nuclear plants. Only a combination of a failure of all these and/or gross human error would result in an accident. It is now accepted that the Chernobyl tragedy occurred because of human error, and the unauthorized shutting off of some alarm systems within the plant.

An interesting light on this aspect was thrown by Mr. Beloded, who, speaking of the Chernobyl disaster, said: "In the course of many years we have been trained to believe in the perfect safety of atomic power stations. This resulted in a situation where managers at all levels were incapable or unwilling to believe what had happened. Even the manager of the Chernobyl station himself refused to believe it. This psychology caused a substantial delay in the information reaching the highest echelons of executive power."

The speakers also paid attention to the public disbelief of facts and interpretations of risk offered by the nuclear industry, and the high costs of nuclear safety and waste disposal. In fact, one of the main arguments of the anti-nuclear lobby is that the overheads of ensuring complete safety in a nuclear plant are so high that most countries tend to compromise on it.

Unfortunately, there was no one from the anti-nuclear movement to critically quiz the speakers in knowledgeable terms. One Press representative went so far as to ask an American speaker if she could envisage having such a "passive" audience at a similar seminar in the USA.

On the other hand, countries like France appear to be conducting a safe and economically viable nuclear industry that, apart from being scientifically advanced, rests its future existence on acceptance by the general public and it can no longer get away with scoffing at laymen's fears. At the same time, the public need to be convinced that the projections of the nuclear industry spokesmen are candid and fair. The latter attitude may take a long time to develop.

Ukrainian Scientist Speaks

51500063 Calcutta THE TELEGRAPH in English
20 Dec 89 p 5

[Article by Pathik Guha: "Glasnost Lost in Chernobyl Cloud"]

[Text] Bombay, Dec 19—Glasnost is yet to leave its mark on the science policy of the USSR, especially in the area of nuclear research.

A research scientist at the Byelorussian Academy of Science's institute of physics has been sentenced to hard labour for organising an anti-nuclear rally in the city of Minsk in September.

The rally—in which some 30,000 people took part—was organised by Dr. Jury Chadyka, defying government orders in protest against the devastating effects of the Chernobyl nuclear accident in April 1986. Byelorussia was one of the provinces that was affected by the fallout from the disaster in the Ukraine.

These details were disclosed by Mr. Rostislav Beloded, head of the international relations department, Ukrainian Academy of Sciences at the regional seminar of the Vienna-based International Atomic Energy Agency [IAEA] here today.

Describing the accident, in which 31 persons died, as a "gigantic tragedy," Mr. Beloded said, "We have to admit that during the initial period there was an acute lack of dosimetric instruments (to measure radiation does among the victims) special clothing and security devices, especially in the zone nearest to the nuclear powerstation." He also admitted that the Soviet government refused to any financial aid from overseas to ensure the safety of the affected.

According to Mr. Beloded, dosimetry monitoring in the Ukraine was one of the most complicated and important tasks the government had to solve in mitigating the consequences of the accident at Chernobyl.

"Although the accident took place more than three years ago, radioactive contamination of the environment in large areas of the republic still presents an acute social and technical problem," he said, adding, "Such a situation will exist for a long time. The situation is most complicated in the Kievan and Zhitomyr regions with populations of around 200,000 people."

Mr. Beloded, who spoke on "The Chernobyl experience" at the seminar today, not only surprised his Asian audience but also lent credence to western critics of the Soviet nuclear power programme who allege that the USSR is not coming clean on the actual loss at Chernobyl as he said, "Whatever was connected with nuclear power was in the country covered with the veil of secrecy."

According to Mr. Beloded even the manager of the Chernobyl plant himself at first refused to believe that such an accident had taken place. "He (the manager) practically sent people to sure death in order to see if it were really true," Mr. Beloded commented. "This psychology has caused a substantial delay in the information reaching the highest echelons of executive power."

Mr. Beloded pointed out that the initial mistrust has only increased misconceptions in the USSR. He referred to a joke doing the rounds in the Ukraine, in which an 80-year-old man proposes to a girl one-fourth of his age saying his bald pate is a handiwork of Chernobyl.

Conclusions Reported

51500063 New Delhi *PATRIOT* in English
27 Dec 89 p 9

[Article: "Costs and Storage Hindering LDC's Nuclear Option"]

[Text] Bombay, Dec 26 (PTI)—The exorbitant costs involved in setting up of nuclear power plants and expenses and uncertainties in the transportation and storage of spent fuel are the most critical factors hindering developing countries opting for nuclear power generation on a large scale.

This has been the conclusion mediapersons could gather from the deliberations of the two-day regional seminar here on a nuclear power organised by the International Atomic Energy Agency (IAEA) at the Tata Institute of Fundamental Research recently. The focus of the proceedings at the seminar was entirely on media understanding of the advantages of and disadvantages of nuclear power.

Experts from the IAEA briefed the press on the existing procedures governing nuclear power generation and elaborated the circuitous time-consuming and costly manner of transporting spent fuel to the country of origin, re-processing to extract plutonium and other products and sending the radio-active waste back to the user country.

IAEA also stressed that there was a need to have a strong infrastructure and well-trained manpower to operate nuclear power plants in a safe and efficient manner.

"Much has been said about internationalising nuclear power in which fuel would come from somewhere and burnt fuel returned somewhere else only to bring back the associated radioactive waste to the user country. Apart from a high degree of vulnerability of the programme, specially in the developing countries, this scheme would completely kill any motivation for undertaking research and development in advanced areas. This would deprive these countries of benefits of the fallout of such R and D and also inhibit their growth", said Dr. P. K. Iyengar, Director of Bhabha Atomic Research Centre (BARC) in his introductory speech.

The cost of setting up a nuclear power plant that runs into several crore of rupees and the likely stop-gaps would naturally inhibit the potential of this source of energy the scientists at the seminar felt.

The manufacturing cost per kilowatt of installed nuclear energy would be in the range of 25,000 rupees in India. In addition to foreign exchange outgo involved in shipment and insurance, making such a programme is not a viable proposition for developing countries, which are always in short of foreign exchange.

Dr. Hans Blix, Director-General IAEA, pointed out in his speech that generating nuclear power is no easy task and as developing countries do not have trained manpower or grids.

Nuclear Scientists, Workers Petition Prime Minister

51500078 Bombay *THE TIMES OF INDIA* in English
18 Jan 90 p 12

[Text] Bombay, January 17—The Indian Rare Earths Workers' Union has appealed to the Prime Minister, Mr.

V.P. Singh, to revert the decision of the government of shifting the existing thorium plant at the Bhabha Atomic Research Centre (BARC) to Orissa.

In a memorandum submitted to the Prime Minister on Monday the union members said that the thorium plant which belongs to the Department of Atomic Energy at Trombay has been functioning since August 1. Since then, the memorandum said that the factory has been satisfactorily giving production of thorium compounds and unfinished uranium.

However, taking into consideration modern technology it was decided to have a bigger project of 300 metric tonnes per year at an estimated cost of Rs three crores. "Unfortunately the successor of Dr. H.N. Sethna tried to uproot the proposed Bombay-based project to Orissa," the memorandum said. The capacity of the proposed new plant at Orissa is about 150 metric tonnes per annum with an investment of Rs four to five crores.

If the existing plant is shifted about 600 small industries depending on the thorium plant and its employees will suffer. "It is, therefore, earnestly requested to revert the decision of shifting the existing Trombay plant at Orissa to save us from uprooting and also the country from the loss of crores of rupees," the memorandum said.

In another memorandum submitted to the Prime Minister the Bhabha Atomic Research Centre Officers' Association (BARCOA) listed its demands. Mr. Singh agreed to a suggestion that the involvement and improvement of the working level scientists can only correct the present "development plateau."

The issues discussed included the working level scientists' participation in management, amendment to the Official Secrets Act, checking the erosion of pay structure of the scientists, administrative reforms and organisation review and housing problems.

The memorandum stated that the Prime Minister took a keen interest in these issues and promised to look into them. He agreed to take appropriate action and issue the necessary directives.

In a memorandum to the finance minister, Professor Madhu Dandavate, the association has appealed to him to implement the recommendation made by the previous government giving income-tax exemption to scientists. According to the association, if this was done it would raise the quality of scientific manpower and reverse the process of brain drain.

Defense Experts on Effect of Pakistan Nuclear Sub

51500079 Bombay *THE TIMES OF INDIA* in English
22 Jan 90 p 18

[Text] New Delhi, January 21 (PTI)—Pakistan's possible acquisition of a nuclear submarine from China will considerably change the tactical configuration in the Arabian sea and the region, defence experts feel.

Reacting to a report in *THE FAR EASTERN ECONOMIC REVIEW* that Pakistan is negotiating to purchase a nuclear submarine from China, the experts said the acquisition would transform the strategic scenario in the sub-continent.

Pakistan has been striving to get a nuclear-propelled submarine to counter the Indian acquisition of the training submarine, INS Chakra. Mr. Udaya Bhaskar, an expert at the Institute of Defence Studies and Analysis, said.

He said something concrete may have been finalised as the report came in the wake of the recent visit of the Pakistani minister of state for defence, Mr. Ghulam Sarwar Cheema, to China and the reported visit of Chinese navy commander, Mr. Zhang Lianzhong, to Pakistan.

Surface Fleet

Pakistani surface fleet has doubled in recent years and the inclusion of a nuclear submarine will disturb the equation along the imposing 7,000 km Indian coastline, he said.

"The Indian navy will have more to contend with than [as published] midget submarines and submarine launched Harpoon missiles," he said.

Mr. Bhaskar said negotiations for a nuclear submarine seem to be on since 1988. In July, 1988 the defence and foreign affairs weekly reported that Pakistan was likely to acquire a nuclear submarine from China.

The submarine, the report conjectured would be the attack submarine of the "Han" class.

"Acquisitions of this nature are always shrouded in secrecy and even in the case of the Indian navy's Chakra, it was only a few months before the actual arrival of Chakra in Indian waters that the news leaked," Mr. Bhaskar said.

Naval Ships

Again, he said, Pakistani newspapers had carried reports saying the U.S. was likely to sell nuclear submarines and maritime patrol aircraft to Pakistan. The report was denied by the U.S. embassy in Delhi.

During Mr. Cheema's China visit, two naval ships were reportedly handed over to Pakistan and two others would be given by the end of February, this year. Mr. Cheema held discussions with the Chinese premier, Mr. Li Peng, chief of the Chinese Military Commission and other officials.

AEC Chairman on Building of Nuclear Power Plants

51500080 Madras *THE HINDU* in English
24 Jan 90 p 9

[Text] Cochin, Jan 23—Dr. M.R. Srinivasan, chairman of the Atomic Energy Commission, has said that the proposed 2,000 MW Koodangulam atomic power station was expandable to 4,000 MW or more.

Talking to reporters at Angamali on Monday, he said Kerala would get the benefit of the nuclear power plants at Koodangulam in Tamil Nadu and the Kaiga plant in Karnataka where two units of 235 MW were under

establishment and where four more similar units could be set up after obtaining the necessary sanctions.

Though some sites for the establishment of a nuclear power station suggested by the Kerala Government were evaluated, none were found suitable—neither the sites in the coastal belt which had a very high density of population nor those in the interior parts. In fact, he himself headed the site selection committee.

However, recently, the Chief Minister, Mr. E.K. Nayanar, seemed to be interested in getting a nuclear power plant for the State. The AEC would have no difficulty in evaluating the suitability of any other sites suggested by the State Government, Dr. Srinivasan said.

All the same, Dr. Srinivasan said, the Commission did not look at State borders as a restraint for locating nuclear power stations as such stations were being established regionwise.

Answering a question, he said that from the technical point of view, like availability of designs, the capacity of industry to make components, fuel and heavy water, the country could hope to achieve its target of 10,000 MW from nuclear power plants by 2000 AD from its current capacity of 1,500 MW. But there were other considerations like finance on which would depend the success of the programme, he added.

The AEC Chairman formally took over the 260 KV generator transformer for the Tarapur atomic power station manufactured in a record time of less than four months by the Kerala Government undertaking, the Transformers and Electricals Kerala Limited (TEKL) at Angamali.

This transformer, when installed, would put back the Tarapur unit in full steam. Of the two units in Tarapur, one became crippled in August last when one of the two transformers developed a defect after serving 20 years. Before they could locate and get another transformer on loan from Gujarat to get the unit going partially at least, about four and a half months of generation had been lost. The transformer gotten on loan was of a capacity smaller than the required one.

The chairman explained that the difficulty arose because the voltage range of the original transformer was 12 KV to 230 KV. This range was no longer standard in the country now, the present standard being 16.5 KV to 230 KV.

He said that after discussions, the Nuclear Power Corporation had decided that TEKL would be able to supply the transformer in the shortest possible time.

IRAN

USSR To Aid Establishment of Nuclear Power Units
NC0703080990 *Tehran Domestic Service in Persian*
0430 GMT 7 Mar 90

[Text] Two nuclear power stations—each with a capacity of 440 megawatts—are to be set up in Iran with Soviet

assistance. According to the Central News Unit, in a meeting of the Soviet minister of transport [title as heard] with the presidential deputy and the head of the Iranian nuclear energy organization, the Soviet minister announced the definite agreement of his country to cooperate in the establishment of two nuclear energy units, each with a capacity of 440 megawatts, in Iran.

During this meeting the two parties also reached agreement on other means of cooperation for peaceful purposes in the nuclear field.

ISRAEL

Firm Developing Rocket Engine for Satellites

TA0103144790 *Jerusalem Domestic Service in Hebrew*
1400 GMT 1 Mar 90

[Text] Israel Aircraft Industries is developing a rocket engine to launch 2,100-kg satellites. Our correspondent reports the engine is used in the interim phase to raise the satellite from a low orbit of 200 km above the earth to 36,000 km. The engine will be used to launch communications satellites to a permanent orbit in space. Neither the cost of developing the engine nor the duration of the project has been disclosed.

KUWAIT

Defense Chief Denies Long-Range Missiles Bought

LD0903093390 *Kuwait KUNA in English* 0706 GMT
9 Mar 90

[Text] Kuwait, March 9 (KUNA)—Minister of Defense Shaykh Nawaf al-Ahmad Friday denied that Kuwait had purchased long-range missiles and stressed that it maintains good relations with the region's countries.

In an interview with daily AL WATAN, published today, Shaykh Nawaf said the region's future is safe as long as security and stability have prevailed following the ceasefire in the Gulf war. He expressed hope that both countries would reach a comprehensive peace agreement to start a new stage of cooperation on the basis of one religion and good neighborliness.

Shaykh Nawaf expressed satisfaction over military cooperation among the Gulf Cooperation Council [GCC] states, noting that the 4th peninsula Shield maneuvers, which are currently taking place in Kuwait, form an advanced stage of such cooperation.

Shaykh Nawaf and chief of staff of the Kuwaiti Armed Forces as well as chiefs of staff of GCC member states are scheduled to attend activities of the maneuvers next Sunday, the paper said.

PAKISTAN

Official Says Nuclear Plant Poses No Threat

BK0403163790 Islamabad Domestic Service in English
1600 GMT 4 Mar 90

[Text] The chairman of the Atomic Energy Commission, Mr. Munir Ahmed Khan, has said France has recognized Pakistan's requirements for cheaper energy for economic development of the country. He was briefing newsmen in Lahore today on the salient features of France's decision to supply a nuclear power plant to Pakistan. He emphasized that the plant is to be subject to safeguards by the International Atomic Energy Agency [IAEA] and will not pose a threat to anybody.

Earlier, the atomic energy chief inaugurated a five-day national workshop on evaluation of IAEA technical cooperation projects.

Official Says No Change in Nuclear Policy

BK2802104790 Islamabad THE MUSLIM in English
28 Feb 90 p 8

[Text] Islamabad, Feb. 27—Munir Ahmed Khan, Chairman, Pakistan Atomic Energy Commission [PAEC], today categorically stated that neither Pakistan has changed its nuclear policy nor bargained on this issue.

In an interview tonight telecast by Pakistan Television Munir Ahmed Khan said that Pakistan's stand was based on principles. He said Pakistan would be ready to accept IAEA [International Atomic Energy Agency] safeguards on plants supplied by foreign countries but not on locally produced installations unless India abides by these safeguards.

Acquiring of nuclear technology for peaceful purposes was our right, he added.

To another question the PAEC Chairman said that France has regretted to supply the reprocessing plant for which Pakistan has claimed compensation of loss it suffered.

French President Mitterrand has agreed to pay the compensation which would be determined through mutual negotiations, he said adding that an agreement to this effect would be signed soon.

Differentiating the role of the reprocessing plant and the nuclear power plant, Munir Ahmed Khan said that the reprocessing plant purifies the fuel used in the nuclear power plant so that the remaining uranium could be utilised again. While the nuclear power plant simply produces electricity, he added.

Munir Ahmed Khan said the apprehensions of United States and India were completely baseless on the proposed French nuclear plant. He said Pakistan was acquiring it for only peaceful purposes. He said "we need electricity. We need it immediately and urgently."

The Chairman of PAEC said the proposed plant would be subject to international inspection and hence any apprehension otherwise were baseless.

While replying to a question whether Pakistan can rely on France after the previous experience regarding the unilateral abrogation of supply of a nuclear reprocessing plant, he said the situation now was different.

He said President Mitterrand has expressed full confidence that Pakistan's nuclear programme was peaceful and secondly that the reprocessing plant was sensitive one.

Replying to another question about the indigenisation of nuclear power plants he said in the process of establishment of the plant in Pakistan we will gain experience and eventually in due course of time Pakistan would be able to develop these type of plants.

Referring to the nuclear fuel for this plant Munir Ahmed said initially it would be provided by the French suppliers which would be sufficient for several years. Fabrication of nuclear fuel in Pakistan for this plant at this stage will not be feasible both economically and technically, he added.

He said our uranium enrichment facilities were still in the initial stage and enrichment costs were also very high. Moreover, he said we can not afford to run any risk for the safety of the plant.—APP [Associated Press of Pakistan]

Spokesman on U.S. Reaction to French Deal

510047024 Karachi DAWN in English 23 Feb 90 p 1

[Text] Islamabad, Feb 22—Pakistan Foreign Office spokesman told newsmen here on Thursday that the reaction of the United States to the French decision to supply Pakistan with nuclear power plant "is not well-founded."

The spokesman was responding to the critical reaction of the US to the French decision.

He said Pakistan was fully aware of US concerns about nuclear proliferation and it had reassured the world time and again that its nuclear programme was entirely peaceful.

"The French nuclear power plant will be subject to international regulations and controls and guarantees which apply to the export of nuclear material by France," he added.

He said that while addressing a joint Press conference with Prime Minister Benazir Bhutto on February 21, the French President had reiterated France's commitment to the objectives of nuclear non-proliferation.

And the Prime Minister of Pakistan, he added, had expressed her readiness to sign the nuclear non-proliferation treaty (NPT) if India also agreed to do the same.

Adding, he said, Pakistan had always emphasised the need for a non-discriminatory nuclear policy and recalled that Pakistan had made a number of proposals for bilateral, regional and international agreements to keep South Asia free from nuclear weapons.

He further pointed out that in the same Press conference, President Mitterrand had expressed his full confidence in Pakistan's peaceful nuclear programme.

When asked, he said he felt the declarations made by the President of France and the Prime Minister of Pakistan on the issue should fully satisfy any country in the world of Pakistan's peaceful intentions.

Answering another question, the spokesman said that Pakistan was convinced that there would be no pressure on France to refrain from selling NPP to Pakistan or on Islamabad not to buy one.

Answering a question about India's concerns about the deal, the spokesman said that India should not have complaints against it because New Delhi itself was planning to buy two similar power plants from France soon and in 1982 India had bought heavy water from France when the US refused to supply it.

AFP report adds: The US State Department on Wednesday implicitly criticised French President Francois Mitterrand's decision to sell Pakistan a nuclear plant without prior assurances it would not be put to military use.

"France has apparently agreed to sell a nuclear reactor to Pakistan without requiring that Pakistan accept full scope IAEA (International Atomic Energy Agency) safeguards on all nuclear activities in Pakistan, not just on the item being exported," spokesman Adam Shub said reading from an official statement.

The statement indicated that the United States was against helping develop civil nuclear programmes in countries which have no nuclear weapons unless they accept all IAEA safeguards.

Editorial Views U.S. Aid, Nuclear Plant Issue

BK0903095890 Lahore THE NATION in English
9 Mar 90 p 6

[Editorial: "Pakistan's Case for U.S. Aid"]

[Text] Soon after the deal with France about the purchase of a nuclear power plant, some well-known lobbies in the U.S. have been trying to influence the Bush administration against the waiver to the Symington Amendment. A link is sought to be established between this deal and the issue of nuclear proliferation—to prevent which the Symington Amendment happens to be on the U.S. statute book. That there was no link between the acquisition of a power plant for energy needs and the development of a bomb particularly when the plant was being supplied under international safeguards, ought to have discouraged speculation in this regard, but it has

not. Propaganda and lobbying, suspected to be financed by India and Israel, has continued. And it will probably continue so long as President Bush's waiver against the Symington Amendment, which would be applicable from April 1991 onwards, remains under the consideration of the U.S. Congress.

The U.S. Assistant Secretary of Defence, in the course of his statement before the Sub-Committee on South Asian and Pacific Affairs, has said that as the military in Pakistan had supported the revival of democracy in the country the U.S. could strengthen this "constructive trend" by continuing with military and other assistance to the present government. But even more noteworthy in his statement is the argument that India perceives all its neighbours as constituting its "security environment" and has been building its military muscle accordingly. Although the full text of the statement is not available, the implications of the argument seems to be that India claims the role of a regional policeman and would like to intervene in the affairs of its neighbours as and when it thinks fit. It is against such a contingency that Pakistan's defence needed to be beefed up. It is too early to say how the congressional Sub-Committee would react to this line of argument, but so far as Pakistan is concerned, it is aptly put and no truer word has been said on the subject.

Country Said Capable of Fabricating Fuel

51004702B Karachi DAWN in English 23 Feb 90 p 12

[Text] Islamabad, Feb 22—Pakistan has the technical and material capability to fabricate indigenously the fuel required for operating the 900 MW French and the 300 MW Chinese nuclear power plants (NPPs) offered recently to Islamabad by Paris and Beijing respectively.

According to informed sources, this indigenous capability will be exploited if it was found to be more economic than the cost of imported fuel. "Otherwise it will be used only in case foreign supplies are cut off for some reason."

Both the French and the Chinese NPPs are said to be of the same type. There are an estimated 250 such plants operating all over the world.

While the price of the French NPP is yet to be worked out between Pakistan and the French private sector suppliers, South Korea is said to have purchased two similar plants recently at a cost of \$1.5 billion apiece.

Pakistan reportedly feels that the compensation payment on which an agreement on principle has been reached between Pakistan and France during the recently concluded visit of the French President to Pakistan would not be enough to pay for the French NPP.

Islamabad therefore is said to have held preliminary talks with the French Government on the financial aspect of NPP deal and Pakistan hopes that in the next

few weeks these talks "will achieve a coherent shape," and a French credit for financing the purchase of NPP would be forthcoming.

France had entered into a contract with Pakistan in 1976 for the supply of a nuclear reprocessing plant (NRP), but under pressure from the US it broke off the contract in 1977 and since then the two countries were locked in a dispute over compensation by France to Pakistan for not honouring the contract.

The French suppliers are expected to complete the job of erecting the plant in six years time following the signing of the contract. The plant will use three per cent enriched uranium.

Initially, Pakistan will store spent fuel, but later it would either return the fuel to suppliers, store it indigenously or recycle it, whatever the final terms of the contract which are yet to be worked out.

Diplomatic circles in Islamabad believe that the decision of China in December last year to supply Pakistan with a nuclear plant of 300 MW actually helped lift the taboo placed on Pakistan by world nuclear suppliers and paved the way for France to remove the ban it had placed on the export of NPP to Pakistan.

But signals from the French President's House were highly encouraging in the sense that they indicated the high regard the French President had for the return of democracy in Pakistan and the great admiration this 64-year-old world Statesman had for the Pakistan Prime Minister.

Aid for Nuclear Power Plant Sought From China

HK0703045090 Beijing CHINA DAILY (BUSINESS WEEKLY) in English 5 Mar 90 p 1

[By staff reporter Yu Yuanchao]

[Text] China and Pakistan are expected to start talks this year on a 300-megawatt nuclear power plant to be built in Pakistan after the completion of a technical feasibility study.

The project was proposed by Pakistani Prime Minister Benazir Bhutto to Premier Li Peng during his visit to Pakistan last November, said an official with the China Nuclear Energy Industry Corporation (CNEIC).

Pakistan has asked China to help build a plant the same size as the nuclear power station at Qinshan in East China's Zhejiang Province.

Construction of the plant is to be under the supervision of the International Atomic Energy Agency of which both countries are members.

Wu Fuxin, CNEIC deputy manager who has attended negotiations on the project, told BUSINESS WEEKLY

that nuclear experts from the two countries have been exchanging views on the technical feasibility and other aspects of the project.

He said that if the project is approved, construction of the plant is expected to be contracted out to Chinese construction companies and nuclear fuel for the pressurized-water reactor will be supplied by China in the initial stages of operation.

The Qinshan plant, China's first nuclear power plant, is scheduled to begin operation in December. About 75 percent of the equipment in the plant is being made by domestic factories, with 25 percent, including the pressure vessel and Neutron-flux testing system, imported.

Pakistani officials say that although the capacity of plant is not big, it is suitable for developing countries.

"China and Pakistan are friendly neighbours and have close co-operation in the nuclear industry," Wu said.

He noted that a micro-reactor sold by China to Pakistan for scientific research in 1988 was put into operation last October. The reactor, developed by the China Nuclear Energy Research Institute, is ideal for nuclear physical experiments, he said.

Another Middle East country, which Wu declined to name, has also placed an order for a reactor from China. Sales of more such reactors to developing countries have been negotiated, but the corporation faces fierce competition from industrialized countries, Wu said.

China has exported nuclear fuel to a few industrialized countries, including the United States, West Germany, France, Belgium and Finland. CNEIC has also supplied uranium to Japan and Chile for scientific research under the supervision of the International Atomic Energy Agency.

SYRIA

Probable Supply of Sophisticated Weapons From USSR

JN0703212890 Kuwait AL-RA'Y AL-'AMM in Arabic 6 Mar 90 p 1

[Text] London, AL-RA'Y AL-'AMM—Military experts and strategists have said that the USSR continues to supply Syria with sophisticated weapons despite previous Soviet statements on a reduction in Soviet military aid to Syria. They added that Syria's growing arsenal of Soviet missiles, some of which can carry sophisticated warheads, poses a grave danger to Israel. They indicated that Israel views Syria as a major problem, not only because it has borders with Israel but also because it has surface-to-surface missiles. The experts said that Syria has medium-range Scud missiles capable of carrying sophisticated warheads and short-range SS-21 missiles that can score more accurate hits. They pointed out that Syria can do what other armies cannot; that is, inflict heavy losses on Israel. The experts estimated that Syria

has 18 SS-21 missile batteries. They said that the USSR supplied 24 Sukhoi Su-24 fighter planes to Libya, Iraq, and probably Syria. They added that Israel, with U.S. aid, has begun to manufacture the missile "Hats", the missile interceptor "Arrow", which is part of the U.S.

Star Wars program to help confront Arab missiles. The experts went on to say that the lack of financial appropriations would jeopardize the future of this project. They added that the Israeli project would be frozen if the United States were to suspend its aid.

Karelian Nuclear Power Project Suspended*LD1902115390 Moscow Domestic Service in Russian
0900 GMT 19 Feb 90*

[Text] The Presidium of the Karelian ASSR [Autonomous Soviet Socialist Republic] Supreme Soviet has adopted a decision on suspending research and projects for the construction of the Muzerzeka atomic power station until a law is adopted on the use of nuclear energy and on nuclear safety. This was preceded by rallies and meetings and press articles by candidate people's deputies of the RSFSR [Russian Soviet Federated Socialist Republic] and of local soviets.

The Council of Ministers of the autonomous republic has been instructed to speed up an alternative energy supply program.

Public Protests Stop Karelian AES Project*LD2202213890 Moscow TASS International Service
in Russian 1231 GMT 22 Feb 90*

[Report by TASS correspondent Vladimir Zlobin]

[Text] Petrozavodsk, 22 Feb—At the demand of the inhabitants of Karelia, an autonomous republic in the north west of the USSR, prospecting work has been stopped on the site of a proposed atomic power station in Muzerskiy Rayon on the border with Finland. The Karelian Supreme Soviet Presidium has adopted a decision to suspend work on the feasibility study for the nuclear electric power station [AES] project until the adoption of a USSR law on the use of atomic energy and nuclear safety. And this, despite the fact that 4.3 million rubles has already been spent on developing the project over the past two years. It was the unresolved ecological aspects of the development of atomic power and in particular the uncertainty over the radiation safety of the reactor type proposed for the future AES that prompted the local people to campaign for an end to the construction of such a dangerous facility.

The planners intended the Karelian station to become one of the biggest, producing up to 6 million kw of power. In place of the AES, scientists are now urgently working on an alternative power supply program for Karelia, taking into account the introduction of energy-saving technologies at enterprises. A study is being done on the opportunities of obtaining hydropower from Karelia's numerous rivers, and of constructing power installations using nontraditional renewable sources of energy.

Government Postpones Rostov AES Commissioning*LD2102235390 Moscow Domestic Service in Russian
1100 GMT 21 Feb 90*

[Text] Here is some information that has just reached us on the TASS teleprinters. The country's Council of

Ministers has adopted a decision to postpone the commissioning of the first power set of the Rostov nuclear electric power station [AES] until an ecological study has been completed. The public has repeatedly expressed concern that the station was being built without due consideration of its unfavorable consequences for the environment. For the reactor shell has been built on the shore of the Tsimla reservoir, just a few dozen kilometers from Volgogradsk. And so an expert study has been approved. It will start in the final three months of the year.

UK Ambivalence on Nonproliferation 'Obvious'*LD0503154790 Moscow Domestic Service in Russian
0430 GMT 5 Mar 90*

[Excerpts] Today it is 20 years since the agreement on nonproliferation of nuclear weapons came into force. [passage omitted]

What is the attitude to this document of the ruling circles of Britain? I put this question to our London correspondent Vsevolod Shishkovskiy.

[Begin Shishkovskiy recording] Britain, being one of the three depositing countries, from the beginning displayed considerable attention to the agreement and has done much to make it come into force and acquire those international law guarantees that it now has. In this respect our stand is practically identical with that of Britain.

But at the same time the ambivalence of London's position is obvious. On the one hand it indeed displays great interest in the continuation of the agreement so that its guarantees can be strengthened and no other state can break it. But if one is to be entirely frank, one has to admit that such a position of London, and especially of Thatcher's Government, toward the agreement is largely determined by the needs of the Thatcherite policy itself. Its core as before remains reliance on nuclear forces and on Great Britain's independent nuclear deterrent. [end recording] [passage omitted]

Semipalatinsk Radiation Effects Cited*PM1203135190 Moscow IZVESTIYA in Russian
11 Mar 90 Morning Edition p 4*

[Report by own correspondent V. Mirolevich: "Around Testing Range"]

[Text] Kazakh SSR [Soviet Socialist Republic]—A joint session of the USSR Supreme Soviet Committee for Questions of Defense and State Security and Committee for Questions of Ecology and the Rational Utilization of Natural Resources has been held, at which it was proposed to move the nuclear testing range from Semipalatinsk Oblast to Novaya Zemlya.

The question has not been finally decided. The parliamentarians have decided first to assess and weigh up all possible consequences of this action. As S. Tseplyayev,

secretary of the USSR Supreme Soviet Committee for Questions of Defense and State Security, told the editorial office, "Painstaking expert assessments are required for taking a final decision. Then the question of the Semipalatinsk testing range will again go on the agenda of the Supreme Soviet Committees..." After all, as is well known, in March the country's government should, on instructions from the second session of the USSR Supreme Soviet, set forth its position to parliament and submit its proposals on the Semipalatinsk nuclear testing range. The decision—whether nuclear explosions will be carried out here or not—is awaited with hope and alarm by the inhabitants of Semipalatinsk and adjacent oblasts.

But in the meantime there are meetings and demonstrations... The people's diplomacy of the Nevada-Semipalatinsk antinuclear movement is operating actively. Those who are convinced that it is necessary to continue to test weapons in the Kazakh steppe are not sitting idly by either. The screen of secrecy over the testing range's activity has always given certain advantages to the representatives of the military-industrial complex. References to examples and research with which civilians are not allowed to familiarize themselves have turned the discussions into a futile dispute between emotional dilettantes and specialists.

The "Nevada-Semipalatinsk" movement and public demands to make public the testing range's secrets have half-opened some pages of the military's 40 years of activity. Indeed, today it is possible to stand with a radiation monitor on the concreted aperture of the nuclear borehole. You can argue about whether the eruption of mental illnesses is dependent on the regular force four or five earthquakes caused by the underground explosions. But how to forget, how to fail to consider, that from 1949 through 1963 this land experienced hundreds of Hiroshimas and Nagasakis?! Nuclear and hydrogen devices were detonated in the air and on the ground 30 km from villages. You can imagine what the local inhabitants experienced here if sometimes the glass windows broke in Ust-Kamenogorsk (a little over 300 km from the site of the incidents).

The specially created interdepartmental commission acknowledged that mortality among babies, children, and mothers and the population in general, mental retardation, and congenital abnormalities are high in the regions adjacent to the testing range and in Semipalatinsk City. The mental disorder rate is increasing. Suicides have become more common.... I stress that this was the first attempt in 40 years to conduct a comprehensive medical study of the local population.

It has been established that the average life span in the oblast has dropped by three years in the past 20 years. A drastic weakening of the immune system was discovered in half the Semipalatinsk inhabitants studied... Some doctors called this phenomenon "Semipalatinsk AIDS." And one more fact: Outbreaks of cancers here coincide in full with similar figures for Hiroshima and Nagasaki.

Deputies Discuss Semipalatinsk Test Site

LD0102203390 Moscow Television Service in Russian
1530 GMT 1 Feb 90

[From the "Vremya" newscast]

[Text] [Announcer] A group of USSR People's Deputies has been on a visit to study the situation connected with the work of the nuclear test site in Semipalatinsk oblast. It has been visiting local sites, holding a number of meetings with work collectives, and conferring with specialists.

[Correspondent G. Sytykh, identified by caption] This is the final meeting and it is with people's deputies in Semipalatinsk Oblast. It took place at the oblast party committee. [video shows people at meeting]

The people's elected representatives spoke with anger and pain about the pernicious effect of nuclear explosions on the environment and individuals [Video cuts to show interview with Yu.N. Shcherbak, chairman of the Nuclear Ecology subcommittee of the USSR Supreme Soviet and a USSR People's Deputy, identified by caption]

[Correspondent] Yuriy Nikolayevich, there have already been many commissions visiting this land, but the question of the closure of the nuclear test-site still remains open. When, then, will it be resolved?

[Shcherbak] This question should be resolved in the very near future, some time before March. We have been shocked by all that we have heard here. We were particularly shocked by the speech of the respected elder (Immukhanov), who related how 15 members of his family had died of leukemia and cancer. Our view is unequivocal: Nuclear tests at this test-site must be halted immediately, and ways must be sought to improve the health of people and create some kind of new and more healthy sociomedical climate for supplying the population. These people must be repaid the debt that the state incurred with them in conducting the nuclear tests. This is the position of all the members of our commission, our parliamentary group, which have come here, and they will defend it both in the Ecology Committee and in the Committee on Protecting the Health of the People.

Uranium Enrichment Services Exclude S. Africa

PM2202110790 Moscow KOMSOMOLSKAYA PRAVDA
in Russian 16 Feb 90 p 4

[A. Ishchenko article: "Nuclear Business"—first paragraph is a reader's letter]

[Text] It is rumored that the Soviet Union enriches uranium from the RSA [Republic of South Africa] and Namibia. Is this true? [signed] D. Desyatkin, Mytishchi

Actually, why should we not have the right to enrich uranium from the RSA and Namibia? I asked this question at the USSR Ministry of Foreign Affairs.

"The point is that the United Nations adopted a resolution on noncooperation with the RSA in the sphere of nuclear power engineering due to that country's apartheid policy, and our country is one of this resolution's signatories. The Soviet Union does not maintain any economic relations with the RSA. For their part, the West European partners who supply us with uranium for enrichment give us documentary assurances that this uranium has not been purchased in either the RSA or Namibia. All contracts are concluded with Euratom's participation, and nuclear material is under its control at all stages of processing."

Nonetheless, our country does enrich foreign uranium for several firms. I spoke about this with A.G. Chernov, deputy general director of "Tekhsnabeksport":

"Our organization deals mainly with the provision of services in the enrichment of uranium belonging to foreign clients for the preparation of AES [nuclear power station] fuel.

"This is a fairly complex and lengthy process, and similar production units exist only in the United States, the USSR, Britain, France, and China. The USSR receives for enrichment hexafluoride produced in Canada, Britain, and France. Thus, FRG firms carry out uranium enrichment contracts with 'Tekhsnabeksport' by delivering 'commodities' produced in these countries."

"How advantageous is this cooperation for us?"

"The Soviet Union possesses advanced technology for the enrichment of uranium hexafluoride (enhancing its uranium-235 content to a level not in excess of five percent) and the largest production capacities. Proof of this is provided by more than 10 contracts with many West European firms. This cooperation brings in large sums of foreign currency revenue. It must be noted that the provision of uranium enrichment services to foreign clients is strictly in compliance with the 'Directive for Nuclear Exports from the USSR.'

"One important detail: The waste resulting from this enrichment is returned to the client."

Nuclear Waste Dumping May Be Cause of Illnesses

*LD2802221990 Helsinki Domestic Service in Finnish
1900 GMT 28 Feb 90*

[Text] (Jaan Mati Punning), director of the Estonian Institute of Ecology and Oceanography, claims that radioactive waste from Estonian nuclear plants has been dumped off the coast of the Gulf of Finland. In addition, according to Professor (Punning), waste from a chemical factory, containing heavy metals and uranium, has been stored close to the Gulf of Finland in an area which is

separated from the sea by only a small dam. Professor (Punning) also believes that in the town of Sillamae in northeastern Estonia, where the nuclear plants are situated, the cause of the greater than usual illness among children is radioactive waste. (Jaan Mati Punning), professor of Tartu University, is visiting Joensuu for discussions on an international environment conference to be arranged in Estonia next year.

Erkki Ilus, special researcher at the Finnish Radiation Protection Center, considers it very unlikely that the Sillamae nuclear plants in Estonia have dumped radioactive waste in the Gulf of Finland. According to his information there are not even any nuclear plants in Sillamae. The dumping of waste in the Baltic Sea has been banned by an agreement in 1974.

Concern Over DPRK Nuclear Potential Noted

*SK2702123190 Moscow International Service in Korean
1100 GMT 23 Feb 90*

[From the "Focus on Asia" program]

[Text] Some countries around the Korean peninsula have recently expressed concern over the DPRK's nuclear potential.

This concern is further growing in connection with the fact that Pyongyang, after having joined the Treaty on the Non-Proliferation of Nuclear Weapons, has not yet signed the safeguards and inspection agreement with the International Atomic Energy Agency [IAEA] and, by not signing, may try to keep its nuclear activities outside the boundary of international control.

However, it is a well-known fact that very active talks are presently under way between the DPRK and the IAEA over this issue.

Then, why has such a question been raised?

In this regard, our station commentator Ivanov says: According to foreign news reports, the question has been raised reportedly in connection with the fact that a nuclear facility, which has not yet been brought under the IAEA control, is under construction in Yongbyon, northeast of Pyongyang.

U.S., Japanese, ROK, and other foreign mass media contend that the facility is being built in such a way that it can process nuclear fuel, giving them the capability to develop a nuclear weapon.

U.S. President George Bush and ROK President No Tae-u also mentioned this.

As an answer to this, the DPRK Government issued a statement as an explanation. Pyongyang reaffirmed that it is faithful to the Treaty of Non-Proliferation of Nuclear Weapons and to the plan to turn the Korean peninsula into a nuclear-free zone. It appealed to Washington and Seoul to hold talks in this regard. It urged the

declaration of a nuclear-free zone (?on the Korean peninsula) and the withdrawal of nuclear weapons from the ROK.

During the Moscow talks between Soviet Foreign Minister Eduard Shevardnadze and U.S. Secretary of State James Baker, the Korean question and its nuclear state were specifically (?reviewed).

The Soviet Union, supporting Pyongyang's endeavor to establish a nuclear-free zone on the Korean peninsula, noted that the task is presently being finalized to conclude the treaty of control between the DPRK and the IAEA.

The United States as well expressed its hope for an early conclusion of such a treaty between the DPRK and the IAEA, and elucidated how the treaty should be put into practice in the future.

On our country's stand, Ivanov says that its stand is (?clear).

The Soviet Union holds that all treaty member nations faithfully fulfill their given duties.

The Soviet Union also holds that nuclear weapons deployed in foreign countries be unconditionally withdrawn and completely liquidated.

If this happens, some nuclear countries will not need to be concerned about the nuclear potential of non-nuclear nations.

Nuclear Power Plant Planned for DPRK

LD0103161490 Moscow TASS in English 1550 GMT
1 Mar 90

[Text] Moscow March 1 TASS—An intergovernmental agreement between the USSR and the Democratic People's Republic of Korea concluded on December 26, 1985, provides for the rendering of technical assistance by the Soviet Union to the DPRK in construction of a nuclear power plant with four reactors, Soviet Foreign Ministry spokesman Gennadiy Gerasimov said at a briefing here today, commenting on reports to the effect that the DPRK began the construction of four nuclear power plants with Soviet assistance.

At present a site for the nuclear power plant is being selected, Gerasimov said. This work will be completed early in 1992. It is planned to draw up and transfer the technical design of the power plant after 1994.

"In developing cooperation with the DPRK in the nuclear sphere, the Soviet Union will naturally take into account the situation with the signing of an agreement between the DPRK and the International Atomic Energy Agency on guarantees connected with the Treaty on the Non-Proliferation of Nuclear Weapons," Gerasimov stressed.

Mangyshlak Nuclear Reactor Plant Repairs Planned

904E0060A Moscow TRUD in Russian
9 Feb 90 p 4

[Article by O. Kvyatkovskiy: "Get Ready, 'Atomic Oven Repairman'"]

[Text] The world's first nuclear breeder reactor has functioned on the peninsula of Mangyshlak for almost 20 years. Now the decision has been made to shut down the "BN-350" for major repairs.

What is the "BN-350"? Academician I.V. Kurchatov described it this way: It is an oven in which firewood can be placed, but instead of ashes you retrieve twice as much firewood from it...

Yes, the "BN-350" is not only a consumer of uranium fuel but a producer of it too. They put a kilogram of atomic fuel into the reactor, receive warmth and electric energy from it, and after a certain period of time they extract more than a kilogram of atomic fuel from it—plutonium in this instance. It is as though fast reactors stretch out the stores of nuclear fuel.

None of the associates attending to the "BN-350" collected more than one rem in a year. It can be said for comparison that watching a color television for three hours every day over a year gives six millirems, and one x-ray gives 20.

"It is also important to remember," says Valeriy Bolgarin, director of the reactor plant, "that we have 'different physics' here in comparison to thermal reactors. Even if the unexpected happens—the sodium circuit that removes the heat breaks down or the body of the reactor loses its seal, the nuclear process will die out. And this is the chief ecological advantage of the 'fast reactor.'"

And now the "atomic heart of the peninsula" is being overhauled. It is a unique oven. After the repairs, a special commission will decide how much more the reactor can be utilized. But it is clear that for the foreseeable future the physical and technical life of the "BN-350" will end.

"The closing of a reactor plant is a very new and crucial matter," comments V. Bolgarin. "But you will not hang a lock on our plant... The world has seen few examples of this type: In France and England they closed down small-capacity experimental reactors... And that, very likely, is all. As a result we are trying to unite the scholars of various countries around the problem."

Local Authorities Halt Arctic Nuclear Plant Work

LD2202204590 Moscow TASS in English 1822 GMT
22 Feb 90

[Text] Archangelsk, February 22 TASS—The local authorities in Archangelsk, a Soviet arctic city on the White Sea, have decided to halt work on a nuclear heat

supply station. The local mayor announced on television the decision to switch over to gas fuel.

Nuclear power experts had tried to convince the people that there was no alternative to nuclear fuel. Scientists were sent to Archangelsk. The local population was accused of incompetence and radiophobia.

But, the Ecology of the North, a public organisation, and its supporters launched an active public campaign against the station's construction. They had no faith in what they were told after the Chernobyl nuclear accident and they had enough reasons for their concern.

According to geologists, the station's location—five kilometers from Archangelsk—was not well chosen because of the proximity of ground waters. Besides, the designers did not take into account the existence of rich natural gas resources in the Archangelsk region.

The building facilities used for the construction of the power plant will now be used to build a gas main.

Case for Underground Nuclear Stations Aired

PM0603113990 Moscow KOMSOMOLSKAYA
PRAVDA in Russian 6 Mar 90 p 2

[V. Umnov "Forecast" article: "Shall We Bury AES's?"]

[Text] Even before the nuclear power industry had emerged, an argument developed: Where is the safest place to site nuclear power stations [AES's]—on the ground or beneath it? Scientists took the former path, but without forgetting the latter. Experimental underground nuclear power plants, admittedly small-capacity ones, were constructed in the United States, Norway, Sweden, France, Switzerland, and also our country.

What is the gist of the argument, what is the point of "burying" AES's? The point would seem to be simple: It is necessary to increase the safety of the nuclear power industry as much as possible.

Here is A.D. Sakharov's opinion, which he repeatedly voiced and expressed in writing:

"I believe that the surface siting of nuclear reactors should be prohibited regardless of what estimate is made of the likelihood of an accident and of what kind of accidents are regarded as technically possible. The point is that major accidents always occur unpredictably...

And when it is a matter of nuclear reactors, there is always the danger that they will be destroyed as a result of a terrorist act or a military conflict."

The psychological argument is also equally important. After Chernobyl people are simply afraid of living near nuclear power stations.

Another point in favor of underground AESs is that in the event of an accident, the likelihood of an escape of radioactive material, the pollution of the locality, and the threat to people's health would all be many times smaller.

Now for the "cons" of underground designs. These problems are economic and technical. Such an AES must either be sited in rocky ground where there is no groundwater, therefore the spread of radioactive material is impossible, or be buried very deep, or be "placed" on a special tray.

Estimates of the cost of such AES's diverge widely. According to the USSR Academy of Sciences Kola Scientific Center, for instance, costs increase by 10-15 percent for a buried station, and by 15-20 percent for a station sited in rocky ground.

So which comes out on top? As yet specialists do not provide an unequivocal answer. After all, underground projects—both research and planning ones—have been studied largely on the initiative of various organizations, and so are still at the initial stages. They have had no unified targeted program nor coordinator. They have often been based on the same principles established in the "surface" nuclear power industry.

But underground AES's have many peculiarities, and the experience of the subway construction administration, the mining industry, and the creators of compact nuclear reactors for ships would be useful here.

So are we going to bury our nuclear power stations? I think the answer to that question will emerge in a few years. The scientific and technical council of the USSR Council of Ministers Bureau for the Fuel and Energy Complex examined this issue at the end of last year.

The Academy of Sciences and the country's Ministry of Atomic Power Engineering and Industry received instructions to hold in 1991-92 a competition for designs for the construction of one or two limited-capacity underground stations—specialists believe that small reactors may be the most promising.

CANADA

Bruce Reactor Heavy-Water Leak Cut to Trickle

51200010 Ottawa *THE OTTAWA CITIZEN in English*
25 Jan 90 p A12

[Text] Kincardine, Ont. (CP)—Radioactive water was still spilling out of a fuelling machine Wednesday—part of the largest spill of heavy water to date at the Bruce nuclear power plant.

But officials said the rate of leaking water has been reduced almost to a trickle. Officials said plant workers were not in any danger because the water was contained in a massive concrete vault surrounding the reactor.

Plant spokesman Dave Stevens said workers at the Lake Huron plant are still investigating the cause of the 12,000-litre spill that forced Ontario Hydro to shut down a reactor Tuesday.

A robot equipped with video cameras will enter the vault surrounding the reactor today in a continued effort to pinpoint the leak, Stevens said.

"We still have a leak but it's now at a rate of about seven liters an hour. That will continue until we find the source of the leak and repair it. But we can manage that very nicely," he said.

About 100 liters of water was spilling every hour Tuesday night.

Workers discovered the leak early Tuesday when alarms sounded near the primary heat transport system at a Bruce generating station.

The system carries pressurized heavy water that is pumped through reactor fuel channels, heated and then circulated through boilers where the heat is used to produce steam.

The unit will likely be out of service for weeks and three other reactors are also down for repairs.

Officials say the loss of power generation from Bruce shouldn't create an electricity supply problem for Ontario.

FEDERAL REPUBLIC OF GERMANY

FRG-GDR Nuclear Safety Commission Constituted

LD0203133190 Hamburg *DPA in German*
0852 GMT 2 Mar 90

[Excerpt] Bonn (DPA)—The joint commission for technical nuclear safety, agreed between the Federal Environment Ministry and the GDR State Office for Nuclear Safety and Radiation Protection, was constituted on 2 March in Bonn. The aim of the work is to improve technical nuclear safety and radiation protection, above all in GDR nuclear power stations. To this purpose the

body has set up four working groups to deal with the safety of nuclear power stations, nuclear supply and disposal, radiation protection, and legal and procedural questions. [passage omitted]

New Vacuum Plasma Spray Facility Operational

90CW0093A Duesseldorf *HANDELSBLATT in German*
20 Dec 89 p 23

[Text] With the official dedication of the vacuum plasma spray facility at the Institute for Reactor Development of the Nuclear Research Facility Juelich GmbH (NRF), another major piece of equipment was recently put into operation for work on applied materials research. It completes the equipping of the Institute. Work on materials development can now be carried out more intensively in combination with the major equipment already available, e.g. hot isostatic presses and other smaller accessory facilities.

The research and development programs of the Institute contribute to the NRF's key program on "heat resistant materials and structural ceramics." The plasma spray technique will be used in various ways within the framework of this program. In one respect, plasma spraying increases the technological potential for applying various types of surface coatings to high strength materials. This involves protective ceramic layers on metallic materials as well as the metallizing of ceramics for use in protecting against wear and friction. Corrosion resistance and thermal insulating properties of heat stressed materials should also be improved by this method.

The NRF sees a second group of applications for plasma spraying in its strengthening ability, if it is viewed as a competitive process for the production of nearly finished parts (Near Net Shape Technique). This involves spraying components in direct ready-to-use geometry without substantial additional finishing.

Ceramics Coated with 'Heater Coils'

Because of the nature of plasma spraying, it is especially attractive for producing heterogeneous structures, i.e. combining materials of the most varied properties, e.g. composite materials made of ceramics and metals. Studies have already begun in this area, e.g. the manufacture of both superalloy and ceramic components and the combination of both types of materials.

In this context, the production of components by spraying of functional elements also plays a role. As a special example, the development of furnace structures is now being planned, in which, for example, an electrically conducting layer of lanthanum chromide, intended to assume the function of the heater coil, is sprayed onto a ceramic tile. This can be covered by additional sprayed layers. Even the spraying of metal matrix fiber reinforced composite materials should be possible with this method. Applications have already been demonstrated in America.

Work on the production of airtight seals is seen as a third area of application for the plasma spray facility. In the NRF a new method was developed which makes it possible to employ the plasma spray as an aid in joining components by means of hot isostatic pressing. In this method, the components to be joined are placed one on top of the other and the joint is made airtight by plasma spraying with a sealant appropriate for the material. This arrangement is then fixed and can undergo hot isostatic pressing directly. In this way, a diffusion bond is formed, making it possible to join materials which would otherwise be difficult to join, for example ODS alloys.

The facility installed in Juelich was provided by the Leybold Company, Hanau. It consists of a large vacuum tank of about 1.2 m diameter; the spray gun, which produces the plasma and powder jet, is moved by a six-axis robot. The piece to be sprayed rests on a two-axis robot which can be rotated and moved longitudinally. This system of movement permits great flexibility in spraying components with complicated geometries. The vacuum boundary conditions permit maximum cleanliness in the production of composites, especially when dealing with heterogeneous materials. Precleaning and heating of the workpiece using a transmitted arc is also possible. The entire spray process is monitored using process control which sets and regulates reproducible spray parameters. The principal spray gas used as a carrier gas is argon; admixtures of nitrogen, hydrogen and helium can also be employed.

Cooperation With Industrial Partners

All materials which have a melting point can be sprayed, i.e. if they can be converted from solid powders to a liquid state. The sprayed structure then has the properties of rapidly solidified materials: small grain size and a relatively high homogeneity. The porosity of such sprayed structures can be kept very small, although there are material-related problems here.

The NRF reports that, in the meantime, the facility will be used intensively and that there are a number of agreements and cooperative plans with internal and external partners, especially industrial partners, for joint projects.

FRANCE

Mitterrand on Nuclear Plant Proposal in Pakistan

PM2302145290 Paris LE MONDE in French
23 Feb 90 p 8

[Report by Jacques Amalric and Laurent Zecchini]

[Text] Islamabad—As was expected, the "verdict" came on the afternoon of 21 February and was completely favorable to Mrs. Bhutto: France is in principle prepared to build a nuclear power station in Pakistan to help that country meet its energy requirements.

"The political decision has been made.... I think that agreement has been reached.... We have decided to trust Pakistan," Mr. Mitterrand said during the news conference which he gave jointly with Mrs. Benazir Bhutto. It was only a few hours earlier that the president of the Republic had decided to accede to Pakistan's request after Roland Dumas and his counterpart had spent hours drawing up a compromise.

Under the circumstances, Mr. Mitterrand had no option but to give satisfaction to the Pakistanis if he did not want his visit to Islamabad to end in a fiasco. However, the compromise reached does not constitute a formal agreement but it eliminates a taboo—that of the ban on all nuclear cooperation with Pakistan because of a fear of the "Islamic bomb." Having said that, all the details still have to be decided, negotiated, concluded, and this will take years rather than months.

The Pakistanis nonetheless finally have a timetable. According to Mr. Mitterrand's pledges, France will in fact propose an agreement "in the next few weeks" specifying the details of cooperation in the spheres of energy, agriculture, medicine, and industry.

Paris is already authorizing the French industrialists concerned "possibly in association with one or more foreign partners" (there is much talk about the FRG) to "rapidly" put forward a technical and commercial offer for the sale of a nuclear power station. "The French Government will closely follow these negotiations to ensure that they are successful," Mr. Mitterrand added.

One consequence of this break in the deadlock: The financial dispute which has existed between Pakistan and France since the revocation in 1978 of the agreement relating to the construction of a reprocessing plant should be defused. Islamabad was exerting great pressure while Paris refused to lift the nuclear embargo.

Now that this embargo has been lifted, there is reason to think that the Pakistanis will lower their sights, although the two matters are not officially linked. "France and Pakistan," Mr. Mitterrand said on this subject, "have agreed to seek a friendly agreement on the matter of the reprocessing plant, including mutually agreed compensation." It seems certain that this compensation will be more than 300 million francs.

Of course, Pakistan has accepted that the offer of a French nuclear power station should be "defined in accordance with international norms and notably the controls and guarantees which apply to the export of any nuclear equipment." Mrs. Bhutto confirmed that, reaffirming her country's now traditional position after describing Mr. Mitterrand as a "great friend" of Pakistan and "a statesman deeply committed to the Third World and democratic movements throughout the world."

"Pakistan," she said, "is prepared to sign the nuclear nonproliferation treaty as soon as India does likewise.

Meanwhile, we are already implementing its provisions." It is the International Atomic Energy Agency in Vienna, of which Pakistan is a member, which is responsible for monitoring the implementation.

However, these provisions are deemed inadequate by the United States which, before selling nuclear equipment to a country which does not have nuclear weapons, requires monitoring not only of the installations sold but also of all nuclear activities in the country receiving the equipment.

The State Department's negative reaction therefore came as no surprise to the French. They had already been alerted for several days by leaks organized by the U.S. Administration in the CHRISTIAN SCIENCE MONITOR which announced that Pakistan already had "five or six nuclear bombs." The United States has never officially confirmed this information.

Officials on Nuclear Power Industry Problems

*AU0803152290 Paris AFP in English 1445 GMT
8 Mar 90*

[Text] Paris, March 8 (AFP)—France's nuclear power industry, one of the world's largest, is using too many power stations and faces problems in getting rid of nuclear waste and old reactors, according to an official report.

Four-fifths of the state power company's supply is from nuclear power stations, and Electricite de France (EDF) is producing 10 gigawatts too much electricity, said the government-commissioned report issued Wednesday [7 March].

The study also said "the accent must be placed on problems of safety", revealing that many of France's 1,300-megawatt plants were partly out of action last year because of problems in water pressurisers and steam pipes.

Piping defects were discovered early last year at plants in Nogent-sur-Seine near here, Paluel in the west and Saint-Alban in the Alps. The problems have led EDF to begin testing pipes in 56 steam generators in central plant units.

Out of 32 generators tested so far, in eight nuclear reactors, nine were found to have split or twisted tubing, EDF said. The study will take another six months to complete. The report called for a solution to the problem of nuclear waste—a rallying cry for French environmental groups who have protested in recent weeks at proposals for underground waste tips.

Faced with the environmentalists' anger, the government announced last month it was suspending studies of four possible underground tip sites "for at least 12 months".

France's existing nuclear plants are set to produce 200,000 cubic metres of highly radioactive waste over the next 15 years.

The report also highlighted the cost of dismantling old nuclear power stations, saying this appeared to have been underestimated. EDF should consider re-using old sites, the experts suggested.

France currently has 55 nuclear plants in all.

SPAIN

INI Nuclear Cooperation With Iran Reported

Two Nuclear Plants

*90ES0508Z Madrid EL INDEPENDIENTE in Spanish
5 Feb 90 p 2*

[Article by Angel Munoz]

[Text] A number of Spanish firms will build two major nuclear power plants in Iran near the city of Bushehr on the Persian Gulf. According to what this newspaper has learned, the Ministry of Industry gave its approval to the operation after representatives of the Islamic Government recently met with Victor Perez Pita, general secretary of energy.

The construction and subsequent supplying of nuclear fuel will involve several enterprises under the INI [National Institute of Industry], specifically, Nuclear Equipment (ENSA) and the National Uranium Enterprise, Inc. (ENUSA).

Bushehr's two nuclear power plants will produce large amounts of power, 1,200 megawatts each, and plutonium may be obtained from its irradiated fuel to manufacture nuclear weapons.

Construction of the Bushehr plant, using German KWU [Kraftwerk Union] technology, was begun by several enterprises in the Federal Republic of Germany before the Islamic revolution, but Khomeyni's government halted work when the project's civil engineering, the portion not including nuclear equipment, was near completion. The Iranian Parliament recently decided to resume the project although it had been greatly damaged by intense Iraqi bombing during the war between the two countries.

From that time on, the Iranian Ministry of Industry began to contact German firms to have them complete the work. Negotiations mainly involved Kraftwerk Union, which designed the KWU nuclear reactors.

Negotiations with the Germans were not successful since the German Government has prohibited German companies from supplying state-of-the-art atomic technology and nuclear fuel, excluding certain less important components. The Iranian Government then turned to Spain, where the nuclear power plant engineering and construction sector gained experience in the manufacture of atomic complexes of the KWU type with the recent construction of the Trillo I nuclear plant in Guadalajara.

German Technology

Associated Enterprises, one of the biggest engineering firms in Spain, will head up construction of the two nuclear power plants at Bushehr, having completed Trillo I at the end of 1987. Iranian authorities have already signed an agreement protocol to have the Spanish firms build the plant.

In talks held, ENUSA agreed to guarantee the supply of fuel once the atomic complex is completed. ENUSA supplies fuel to all Spanish nuclear power plants except Trillo I, due to its technological specificity, as a result of which EURODIF [European Diffusion Agency] also became involved. The latter is a European company that enriches uranium. Several countries participate, including Spain with 10 percent of the capital.

Although the German Government has prohibited its enterprises from supplying high-technology nuclear equipment to Iran, Kraftwerk Union will be somewhat involved in the project through Spain, opening up a means by which the German nuclear sector can avoid the ban imposed by German officials.

From irradiated fuel from a KWU nuclear power plant one can extract plutonium for the manufacture of nuclear bombs while burning less fuel than normal, meaning the government of the Islamic Republic would be one step closer to manufacturing nuclear weapons. In addition, Iran has a nuclear research center built by French technicians who abandoned the project with the coming to power of Islamic fundamentalism led by Khomeyni.

The fact that the two nuclear plants in Bushehr are right on the Persian Gulf increases the risk to such a facility, inasmuch as Iraq's planes could reach the area in a matter of minutes and again bomb the plants if the two countries resumed their war. In 1981, Israeli military planes destroyed a nuclear reactor which a French company was setting up for Iraq.

[Box, p 2]

Danger of the Spanish Channel

[By A.M.]

Up until now it was clear that seated in the highest posts in the administration were prestigious pro-nuclear officials from the governing party who wanted to reopen Vandellós I or lift the nuclear moratorium. However, we never imagined their nuclear enthusiasm would spill over Spanish borders and result in the approval of the construction of two nuclear power plants in Iran, with the resulting risk involved.

Spain will help Iran in its race to build a nuclear bomb and it will be building a prime military target in one of the most conflict-ridden zones of the world, the Persian Gulf, where, until two days ago, one of the worst wars of recent decades was being waged.

Agreeing with the commencement of nuclear arms reductions by both superpowers, several international analysts have noted the risk implied by nuclear power plants in case of conflict, inasmuch as the effects of a nuclear war could also be obtained by deploying conventional weapons against such facilities.

The risk will be even greater with the construction of two nuclear power plants in the Islamic Republic of Iran. The Ministry of Industry seems to be determined to convert Spain into a channel through which Iran may gain entry into the world of atomic energy. It is a demonstration of absolute irresponsibility.

Iranian Delegation

90ES0508B Madrid EL INDEPENDIENTE in Spanish
6 Feb 90 p 4

[Article by Angel Munoz]

[Text] An official Iranian delegation is in Spain negotiating the construction of two nuclear power plants in Bushehr by Spanish firms. Ten deputies and high officials from Iran's Ministry of Industry held a meeting yesterday with the director of Associated Entrepreneurs, Adolfo Garcia Rodriguez, and will visit the Trillo nuclear power plant this week.

As yesterday's edition of this newspaper reported, that engineering firm has signed a protocol with the Iranian Administration to have Associated Entrepreneurs head up construction of the atomic complex with the participation of INI enterprises, specifically, Nuclear Equipment (ENSA) and the National Uranium Enterprise (ENUSA). Iran appealed to Spain because of its experience in the construction of KWU plants after the government of the Federal Republic of Germany prohibited its firms from continuing construction projects or exporting state-of-the-art nuclear technology and fuel for the two reactors.

German Veto

The KWU nuclear power plants were designed by Kraftwerk Union of the FRG. Associated Entrepreneurs completed the Trillo I atomic power plant of KWU design at the end of 1987. That plant is similar to the Bushehr facility, whose civil engineering is already complete, although greatly damaged by Iraqi bombing during the war between the two countries.

This newspaper tried unsuccessfully to meet with the official Iranian delegation before a working luncheon with Associated Entrepreneurs at a Madrid restaurant. Engineering director Adolfo Garcia Rodriguez prevented a staff photographer from taking a photo at the luncheon, although he told the newspaper that "Iran will comply with all safeguards required by the IAEA (International Atomic Energy Commission) and that his company intends to build the two nuclear plants at

Bushehr with the cooperation of the Federal Republic of Germany, "based on the lifting of the embargo" on Iran ordered by Bonn.

Garcia repeated several times that Iran "will comply with all safeguard requirements" of the IAEA and said that work on the plant "is 60-percent complete" because construction was halted in 1979.

Contacts between Associated Entrepreneurs and the government of Iran began in 1985 and a protocol has been signed for construction of the atomic complex, which obtained the approval of the Ministry of Industry after representatives of the Iranian Administration recently met with Victor Perez Pita, general secretary of energy.

Open Bidding for Vandellos I Repairs Questioned

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31 Jan 90 p 26

[Article by Angel Munoz]

[Text] The company which owns the Vandellos I power plant has begun the process of contracting with a number of engineering companies for modifications to be made in the atomic complex, without waiting for the final report from the CSN [Nuclear Safety Council]. As top executives of some of the largest Spanish engineering companies told this newspaper: "They already know what changes the Council is going to require in the plant, so they have started the contracting process." According to the sources we consulted, the owners of Vandellos I are sure that the government is not going to order the plant's final shutdown.

Vandellos I has been provisionally closed since the Ministry of Industry suspended the third condition of its operating permit, leaving the reactor in a safe shutdown state.

The government, through Rosa Conde [administration spokesperson] and Claudio Aranzadi [minister of industry], has on several occasions stated that the official decision on Vandellos I will depend on the CSN's final report. Nevertheless, while the government is still waiting to decide, the companies which own Vandellos I have decided to move ahead on their own, initiating the necessary procedures to contract for the modifications that will supposedly be required by the Nuclear Safety Council. At this time the Nuclear Safety Council is preparing its final report on the serious accident which occurred on 19 October 1989, and on the plant's design.

The fact that Hifrensa [Spanish-French Nuclear Energy Consortium], the owner of Vandellos I, has started to contract for work before the CSN's final report has been released can only be attributed to two reasons: either the government has secretly informed the company that it is not going to order the plant's final closure, or Hifrensa has decided to make use of its contacts inside the nuclear safety organizations and inside the executive.

Even if the government does not decide on the plant's final shutdown, the facts do raise questions about the Nuclear Safety Council, since it appears that Hifrensa is sure that the CSN is not going to demand major alterations to increase the plant's safety that could result in such excessive costs that the plant would be uneconomic to operate. Therefore, either Hifrensa has received assurances from top CSN officials, or the owners of the plant are not overly concerned about the CSN's final word. That has been their attitude several times in the past, after 1986, when Hifrensa either dragged its feet or didn't bother to comply with the five modifications ordered by the CSN to increase safety at the nuclear complex. As was found with the 19 October accident, and as the CSN said in its provisional report on the accident, the nonperformance of two of these five modifications was a decisive factor in the plant's remaining in "precarious" status after the fire which was detected in a turbine, outside of the radioactive area.

A vote on the final closure of Vandellos I is now pending in the Congress of Deputies. A bill to close this plant has been introduced by United Left, and it is supported by several parties in the Chamber. This vote will take place in February.

Hifrensa is a company in which four electricity companies hold shares: FECSA [expansion unknown], 23 percent; Catalonia Hydroelectric Power Company, which is controlled by Hidrola [expansion unknown], 23 percent; ENHER [Ribagorza National Hydroelectric Enterprise], which belongs to ENDESA [National Electric Power Enterprise, Inc.], 23 percent; Segre Electric Power, 6 percent; and EDF [French Electric Company], 25 percent.

Final Report

Several top people in engineering firms indicated that the majority of the Vandellos I equipment and construction modifications will be awarded to Inypsa [Engineering and Projects, Inc.], one of the companies Hifrensa has asked to begin alterations on the plant prior to its reopening.

On 20 December 1989 two petitions to the government filed by United Left and CDS [Social and Democratic Center] on the closing of Vandellos I were debated in the Congress of Deputies. The Ministry of Industry said that "before making any decision, the executive will wait for the CSN's final report." Given this response, which was preceded by an explanation of the economic costs that might be engendered by the final shutdown of the plant, the deputy from Catalonia Initiative, Espasa Oliver, reminded the minister that there are four ways in which Vandellos I might be definitively closed. This was Espasa's comment: "The Vandellos I plant may be closed in essentially four ways. One, faced with the threat of an administrative or political closure, the company which owns the plant may decide to close the plant on its own. Two, the CSN report may be binding, requiring that the plant be closed. Three, the majority of the

Chamber may take the political initiative to close the plant. Four, the government, interpreting the people's wishes in this matter, may take the initiative and decide to close the plant."

Inside Contacts or a Secret Decision

The fact that the company which owns Vandellos I has begun the process of ordering modifications in the nuclear power plant to get ready for its reopening may be viewed as a slap in the face directed at the government and the Nuclear Safety Council, which have not yet officially made any decision on the plant's future after its provisional closing was ordered, with the suspension of the operating permit for the nuclear complex.

Nevertheless, this interpretation might be considered naive if we take into account that fact that a number of key people in the administration, including one minister, belong to the pronuclear faction of the government party, and have already said in several internal meetings that Vandellos should not be closed.

It does seem clear that if Hifrensa is beginning the process of ordering alterations in the plant, awarding projects to engineering companies to modify and improve the nuclear complex, either the ministry of industry or the CSN must have secretly informed the plant's owners that the government is not going to order the plant's closure, and that the Council will in the end not issue a "harsh" report on the plant, and will not require major changes that carry a big price tag.

If that is the case, they are making a mockery of parliamentary sovereignty. For a vote on this issue is still pending in Parliament. Moreover, it would mean that the government's decision is being concealed from the Congress, since Aranzadi told the Chamber on 20 December that the executive's decision would be postponed until it saw the CSN's final report, which is still being prepared.

Either Hifrensa intends to majestically disregard the administration and pursue its own course, or the decision on Vandellos has already been made.

The Official Response

"Before making any decision, the government will wait for the report" from the Nuclear Safety Council; that was the answer of the minister of industry and energy, Claudio Aranzadi, speaking in the Congress of Deputies on 29 December, in response to a question from United Left-Catalonia Initiative on "the position that the government plans to adopt in response to the people's desire to close the Vandellos I nuclear power plant." Nevertheless, Hifrensa seems not to have heard the minister's official response on the final closing of the Vandellos I nuclear complex, and has decided on its own behalf to begin the process of reopening the plant. To do so, it has asked a number of engineering companies to begin the alterations that the CSN will supposedly require in its final report, which it recently began to draft.

The minister added that "the government, acting in an appropriate manner and as the law requires, will make no decision on Vandellos I until this report has been released; and the decision it makes will go along with the conclusions and recommendations endorsed by the CSN."

Military Interest

The plant's strategic military interest carries a significant amount of weight on the decision which the government will make on the final closing of Vandellos I. The Tarragona plant is the only nuclear plant in Spain capable of producing plutonium which can be used for the construction of nuclear weapons and "this is an asset that the government is not prepared to give up," said a defense ministry source. The breathtakingly rapid changes in the East European countries and the fact that in the future the European nuclear defense umbrella, now in the hands of the United States, will come to rely more on the French and English nuclear forces, with a diminished U.S. control, further increases the strategic interest of this nuclear plant. Until now, Vandellos I has shipped its wastes to France for reprocessing, and France has retained the plutonium extracted from these nuclear wastes. If the government does not want to give up having nuclear weapons in the future, or holding onto the possibility of building them as a political ace, it is clear that from the viewpoint of military strategy, it will not be interested in closing Vandellos I.

PSOE Opposes IU Proposal To Close Vandellos I

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[Article by Angel Munoz]

[Text] Yesterday the Congress of Deputies debated two motions introduced by IU-IC [United Left-Catalonia Initiative] and by the CDS [Social and Democratic Center] which seriously questioned the safety of Spain's nuclear power plants, especially of the first generation plants, Vandellos I, Zorita, and Garona.

In introducing its motion, IU-IC spoke of the spirit of the agreement reached unanimously in the Catalanian Parliament, which asked the central government to shut Vandellos I down permanently, after the extremely serious accident which happened in this nuclear power complex in Tarragona.

The man who introduced the IU-IC motion, Ramon Espaso, pointed out that it is inconsistent for some of the parties which voted for the closing in Catalonia, to abstain now that the issue has been raised in Madrid, in the very Chamber where a vote of this type would be binding on the government. According to Espasa, this shift in position impairs the credibility both of the institutions and of the individual deputies who are members of these parties. The Catalan deputy from Catalonia Initiative stated that, even though the Nuclear Safety Council has not yet released its final report on

Vandellos I, sufficient reasons already exist for a political decision to be made ordering its closing.

The IU motion was divided into two parts, so that political groups which oppose the closing of the two other first generation power plants could vote just to close Vandellos I, without at the same time opposing the use of nuclear power to generate electricity.

PSOE's Position

The text of the motion introduced by IU contained an amendment from the PSOE [Spanish Socialist Workers Party] and another from CiU [Convergence and Union]. The government party argued that before voting to close Vandellos I, it is necessary to wait for the final report from the Nuclear Safety Council, even though this organization has already issued a preliminary report citing the serious design defects present in Vandellos I, and its repeated noncompliance with safety regulations. In 1986 the Nuclear Safety Council ordered five major modifications to be made in Vandellos I in order to avert possible future accidents, but these changes were never made by the company which owns Vandellos, Hifrensa [Spanish-French Nuclear Energy Consortium].

The IU-IC motion stated: "Considering the serious defects existing in terms of safety, both inside and outside nuclear power plants, which became especially evident after the 19 October 1989 accident in the Vandellos I nuclear power plant, and based on appropriate reasons related to available alternatives and the costs entailed in the generation of electricity, the Congress of Deputies hereby urges the government to:

- Definitively cancel the operating permit for the Vandellos I nuclear power plant, with all the safety control consequences entailed therein, until the reactor reaches its safe and final shutdown, and also to supervise all the actions that are to be undertaken until the complete and safe dismantling of the Vandellos I nuclear power plant.
- Definitively cancel the operating permit for the Jose Cabrera (Zorita) and Santa Maria de Garona (Burgos) nuclear power plants, as these are nuclear power plants of the same generation as Vandellos I, and thus carry the same safety risks to human life and health.
- Prepare a new National Energy Plan, to be discussed and approved in Parliament; its fundamental objective should be the replacement of nuclear energy by other types of alternative energy sources designed to produce electricity, in order to achieve significant savings and efficiency through rational energy consumption in our country.
- Clarify all the political liabilities for negligence and shirking of responsibilities which may have existed in the actions of the civil government of Tarragona and in the General Directorate of Civil Protection, both in terms of the ongoing operation and maintenance of

the PENTA [possibly Nuclear Energy Plant-Tarragona] and in the actions which occurred on the day of the accident and on subsequent days."

CDS Petition

The CDS motion urges the government "to demand immediately from the Nuclear Safety Council a ruling which, in view of the similar circumstances existing in the nuclear plants of Jose Cabrera, Santa Maria de la Garona, and Vandellos I, will decide whether or not these plants should be closed, and if not, to establish in a precise manner the steps which these plants must take in order to conclusively guarantee their safety during operation."

[Box, p 25]

Low Radioactivity in the Chamber

Strolling through the corridors of the Congress of Deputies yesterday, any citizen could have measured the ignorance and lack of concern on the part of many members of congress about the serious accident which happened in Vandellos I, and the consequences which that accident might have had.

"How are you going to vote on closing Vandellos?" That was the question this reporter asked a "provincial" PSOE deputy.

"What?" answered the member of parliament, a major force in the debates on the Year 2000 Program. "Oh, the Vandellos closing. Well, I don't know, we'll see what happens. I guess we shouldn't vote on anything. The Nuclear Safety Council will have to decide what to do about that."

That was more or less how the other members of congress we questioned expressed themselves. Based on their responses early in the afternoon, we couldn't tell whether or not they had received an order about how they should vote on the issue.

In Spain we have not yet reached the level of the rest of the European Community countries in terms of our sensitivity to environmental problems, and in this case, to the even more serious issue of atomic energy.

For many of the politicians who occupy the 350 seats of Parliament, these are all second or third-rate issues, if they're even that important. The terrible thing about it all is that what is really at stake, although some of them don't seem to realize it, is the health and the quality of life of the people who elected these politicians to serve as their representatives.

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